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THE RUBBER AGE AND TIRE NEWS

OCTOBER 10, 1920 VOL. VIII. NO. 1

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INDEX TO CONTENTS

Safety and Sanitation for Rubber Mills and Calenders 11
The Manufacture of Rubber Tubing 16
Foreign Markets for Rubber and Rubber Goods 17
Natural Coagulation of Hevea Latex in the Absence of Air, After Addition of Lime Salts 19
India Official Sees Bright Future 20
Dunlop Increases Capital 20
Rochester Changes Firm Name 20
Lee Announces Price Reductions 20
Reduction in Prices Unlikely 21
McKone Tire Incorporates 21
Col. Colt Denies Rumor 21
Cumberland Tire Organizes 21
Opportunities for Export Connections 22
Ashland to Begin Production 22
Mid-West Association Bulletins 22
Akron Stock Prices 24

MARKETS

Manufactured Rubber Goods 25
Cottons, Yarns and Fabrics 25
Chemicals and Compounding Materials 26
Crude Rubber 27
Scrap Rubber 27
American Rubber Patents 28

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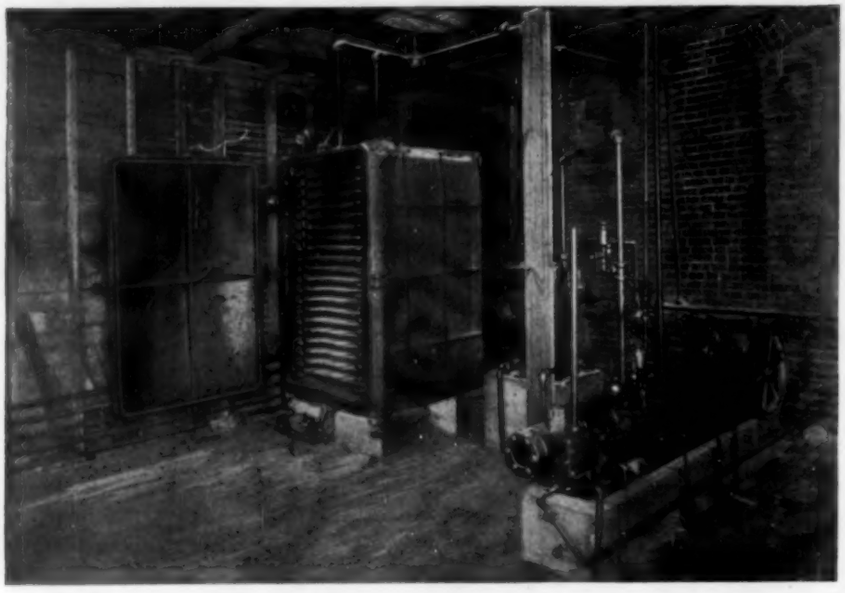

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THE RUBBER AGE AND TIRE NEWS

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VOL. VIII OCTOBER 10, 1920 No. 1

Safety and Sanitation for Rubber Mills and Calenders

By C. B. Mitchella

Engineering Department, B. B. Goodrich Co., Akron, Ohio

Safety and sanitation for rubber mills and calenders covers so many opportunities that if discussed fully would fill a large volume. Many schemes have been tried with varying success for accomplishing the same purpose, and it is the intention that this paper shall present only the most important precautions and the most successful installations.

Education of Operator

Although the education of the operator is the most important of all precautions in preventing injuries on mills and calenders, this part of the subject will not be presented in detail; instead, the discussion will be confined to mechanical safeguards. However, a few pointed suggestions, or rules, to develop mental alertness of the operators are submitted as follows: —

General Rules

1. Follow instructions of your foreman and your inspectors only.
2. Wear no clothing which can be caught in the machines, such as long sleeves, loose neck ties, aprons or unbuttoned jackets.
3. Keep your eye on the job all the time, and give your work your entire attention.
4. Keep your hands off moving rolls.
5. Never force the rubber into the bite of the rolls with your hands.
6. Never oil, clean or repair your machine while it is in motion.
7. When cutting stock off roll, always cut below the center.
8. If you feel ill, or in such condition as to interfere with your work, report at once to your foreman.
9. Stop machine at once in case of emergency. Do not wait for instructions.

Rules for Mills

10. Never allow your hand to go past the top of the roll, and never reach over one roll to work on the other.
11. Watch your hands when the rubber folds over. Don't let them get caught in the folds. Be careful in doubling the ends of batches when "batching out."
12. Never cross arms when cutting or rolling stock from the mill. Learn to cut and roll with both hands. When cutting from left to right, cut with right hand and roll with left; when cutting from right to left, cut with left hand and roll with right.
13. Never take anything out of the rolls while the mill is in motion. Stop the machinery.
14. Never stand on the mill pan, compound boxes, platforms or makeshifts.
15. Never work with one hand under the rolls while the other is above them.
16. Take care not to catch your fingers between the guide and roll.
17. The back roll of the mill runs faster than the front. Be careful.

Rules for Calenders

18. Never pick stock out of the bite of the rolls.
19. In starting end of liner in building up plies, keep your hands at least six inches from the rolls.
20. Never start calender unless properly signalled.

Safety in Operation of Mills

Safety Throwout to Stop the Mill: A horizontal safety throw-out bar heavy enough to resist the struggling of an injured operator should be placed over each mill roll. These bars should be located six feet above the floor upon which the operator stands, and in plan be located eighteen to twenty-one inches to the front and rear of the bite of the rolls. (Fig. 1 illustrates this double type of throw-out.) The cross bars are made of one inch steel rods rigidly attached to the double levers.

There are three predominating methods of cutting off the power from the mills, (1) Magnetic clutch brake mounted on the motor shaft, (2) Mechanical clutch on either the drive gear of the mill, or on the motor shaft, (3) Dynamic braking of the motor.

From the experience the writer has had on all the above types, recommendation is made to use either the magnetic clutch brake, or the dynamic brake, preferably the former, and the discussion is confined to those types of apparatus. If the magnetic clutch brake is used, it is best to place over one housing of each mill an electric cut-out switch. Many installations of mill lines have been made with only one switch for the whole line, the switch being operated by a cable running from one end of the line to the other, or operated by an equivalent rod. This method is not perfectly reliable because of the lost motion due to the variable tension in the cable, or to the torsional deflection and binding of the rod, any of which will slow down the responsiveness of the switch.

In order that the cut-out switch may be opened with the least travel of the safety throw-out bar, the switch spindle should be geared up to the throw-out lever shaft in a ratio of about five to one. Consequently, it is not necessary to move the safety bar a distance of more than three and one-half inches either up or down. The travel of the safety bar and lever is limited by an adjustable stop, which prevents damage to the electric switch by being thrown too far, and which makes the safety bar more rigid to resist the struggling of an injured operator. It should not require more than a five pound force on safety bar to throw the switch. The electric

Address delivered at meeting of Rubber Section at Ninth Annual Safety Congress of National Safety Councils, Milwaukee, Wis., Sept. 27—Oct. 1, 1920.

switch should be entirely enclosed so that dirt cannot gather on contacts. The wiring from the mill switches should be carried in conduits down the housing, and through the mill pits to the panel board and magnetic clutch (shown on Fig. 2). The brake on the magnetic clutch should be operated by a counter weight and be capable of bringing the mills to a complete stop in no greater time than one second. While the mills are running this counter weight is held inoperative by a solenoid electrified by a circuit which connects the mill safety switches and the clutch. This circuit is fed through circuit breakers which are held closed by a solenoid operated latch.

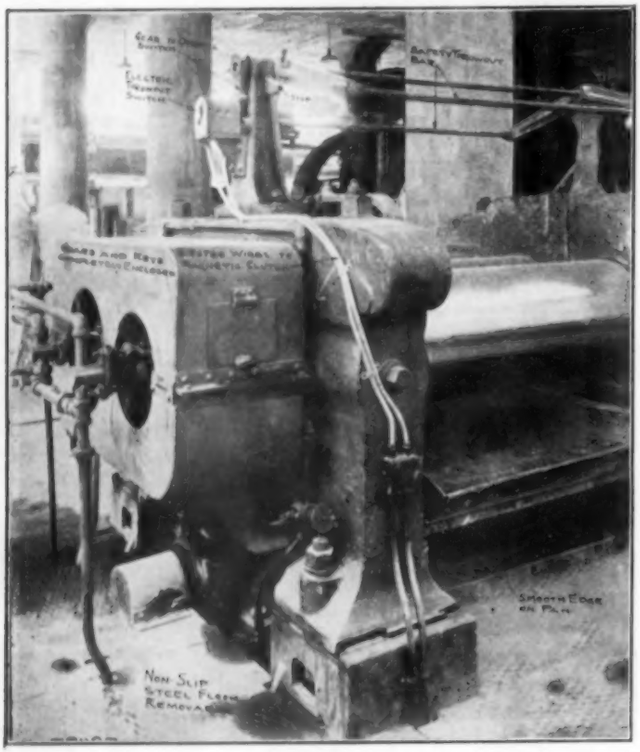

FIG. 1 DOUBLE TYPE OF THROWOUT

After the clutch circuit is broken these circuit breakers cannot be closed except by operator's going to panel board and resetting by hand. Therefore the clutch cannot be engaged if operator should first close the safety switch. It is probably useless to describe the well known construction of the magnetic clutch, but it may be mentioned briefly that this clutch is of the disc type, the two discs being drawn together by electro magnets.

Dynamic Braking

Dynamic braking is accomplished by cutting off the current which feeds the motor and at the same time places a low resistance short circuit across the brushes of the motor armature. The motor then acts as a generator requiring considerable driving power. Obviously this power comes from the rotating parts of the mills decreasing their momentum. As the speed decreases, the power generated by the motor decreases and brings the motor and mills to a smooth yet rapid stop.

There are numerous types of mechanical clutches which have been applied to mill drives, most of them without brakes. Among these, the spiral coil clutch and a disc clutch operated by compressed air are used probably more than other types. No doubt a mechanical clutch can be designed for quickly cutting off the power, but a great many of these clutches now in use do not release readily. In no event should a mechanical clutch be installed without a powerful brake in connection therewith.

The foregoing methods have been applied principally to groups of mills driven by one motor, but the method is equally applicable to an individual mill with its motor drive. An individual clutch for each mill on a line of mills is not so advisable as one clutch controlling a number of mills, because the greater the number of mills, the greater is the resistance and the quicker is the stop.

It is possible that the best throwout mechanism that might be devised may not operate when most needed, and therefore, it is very necessary that daily inspection and tests be made to determine the condition of these safety devices, and a record kept of the surface travel of the rolls. No day ought to start without this test, and no mill ought to be operated until its safety-throw-out is in perfect operating condition. Frequent tests with the mills loaded should be made to ascertain the surface travel of rolls.

Location of Mill Pan Important

The location of the mill pan has much to do with the safety of operator, particularly as to the distance which the operator is kept from the face of the rolls. One of the principal precautions in safety to mill operators is to prevent the operator from placing his hands beyond the top of the nearest roll. It has been found excellent practice to have the least distance from bite of rolls to edge of pan 3 feet 8 inches on 84 inch mills, and 3 feet 1 inch on 60 inch mills. If, for any reason, it is not practical to locate the edge of the pan so far from the rolls, then a bar or pipe guard ought to be placed at the equivalent location. front and rear edges of pan should be smooth, preferably turned down or beaded, to prevent injury to workmen's legs.

The height of top of mill rolls above the floor upon which operator stands should not be less than 4 feet 2 inches. A height less than this gives the operator too great an opportunity to place his hands too far into mill. This height may be increased to as much as 4 feet 6 inches without making it difficult to feed stock into the mill.

The speed of mill rolls should not exceed twenty-five revolutions per minute. Higher speeds cause difficulty and danger in cutting and rolling of stock.

The roll adjusting screw which projects through the front of the housing should have threads of large lead, so that the mill rolls may be separated in the shortest possible time, thereby releasing an operator caught between the rolls, before he can be burned seriously. With threads of large lead, the adjusting screw will tend to back off, because of vibration, but this can be overcome by placing a quick operating clamp back of the head of the screw.

Between the roll adjusting screw and front roll bearing is usually placed a safety breaking cup. This cup often breaks into many small pieces which frequently strike operator. A band or screen ought to be placed around the cup to confine these pieces.

Gears Should Be Guarded

Gears ought to be guarded most thoroughly if it is probable that a workman may be compelled to be adjacent to them. It is advisable in any case to enclose the outside perimeter or face of gears with a sheet steel band to prevent oil or grease from depositing on the floor of the pit. For most thorough guarding, a solid enclosure of steel plate should be provided over face of gears and down the sides beyond the depth of teeth, and the point of contact between gears covered completely. Projecting keys, and other projecting revolving parts, as well as spokes, ought to be covered with removable wire mesh, which will not prevent visual inspection of the gear parts. Proper door openings must be provided in various parts of the guards, to facilitate inspection of the gears, and the guard designed so that it may be most quickly removed when necessary to repair the mill. Guards should be attached neatly and rigidly to a machine to prevent rattling or sagging, or being knocked out of shape, for otherwise the guard may suddenly be removed by a self-appointed specialist, because of its being an aggravation and eyesore.

If there is no passageway between the ends of mills set in a group, then there is no necessity to guard the gears so thoroughly. Instead, a pipe railing, at least 3 feet 6 inches high may be placed between the mills and be fastened to the mill housings. Pipe railing, with a gate, should be set around motor panel boards and other electrical equipment, and these railings wrapped with friction tape, particularly where workmen may operate electric switch and be in contact with railing. Pipe railings around pits, such as for motor drives, are often covered with steel plate from floor to top of railing so that materials may be stored adjacently without falling into the pit.

A mixing apron is desirable for continuously feeding rubber and pigments into the rolls. This apron reduces the number of manual operations which would otherwise be necessary to feed the mill entirely by hand, and therefore, it proportionately reduces the possibilites of injury to the operator. The apron should not be closer than five inches above the mill pan.

Miscellaneous Safeguards Around Mills

Many injuries have resulted to workmen who fell on slippery mill room floors, and various floor coverings such as rubber mats and non-slip metal have been provided for operators to stand upon. These are not entirely satisfactory except that light weight non-slip metal can be used to good advantage for cross overs between mills to cover pit and line shaft, and where it is necessary to remove floor for repairs to equipment. A non-slip cement floor can be made perfectly satisfactory and maintain a perfectly smooth surface. Several prominent firms have laid such floors for years by constructing the original floor finish with a carborundum treatment as follows:—

Proceed as in a neat cement floor finish to the point where the area has first been wood floated to a level surface and finished smooth with steel floats, then sprinkle the finished area with a dry mixture composed of one (1) part 12-30 carborundum grit and two (2) parts of Portland cement. Wood float to a smooth surface and finish with steel float. Sprinkle the area a second time, wood float to a smooth surface and again finish with a steel float. In the two sprinklings use one and one-third (1-1/3) pounds of carborundum grit to each square yard of surface. Cover and keep wet seven days, or longer, as would be done for a neat cement finish.

The above method will make a floor surface which is considerably harder than the ordinary cement finish. This method can also be used in combination with the metallic floor hardeners.

Several accidents have been attributed to improper lighting of mill rooms. Momentary blindness of workmen caused by excessive glare of lamps may be the cause of a workman's making a wrong movement. A poor lighting system will produce fatigue due to continuous eye strain. A general lighting system of uniformly spaced units distributing light equally over the whole mill room, with an intensity of 5 foot-candles, (as shown in Fig. 1) will make the mill room a safe and cheerful place to work. An inexpensive lighting unit may be used, the reflector being of metal, dome type, porcelain enameled. This reflector used with a bowl enameled type C lamp of high wattage, will produce a diffused, high intensity, non-glaring illumination. However, where ventilating hoods are placed above mills it will be necessary to install a local lamp under the hood, in such a location that it will be up and out of the normal vision. This lamp should be covered with a heavy cage to protect it from breakage. The intensity of light on the mill rolls should be the same as provided in the general lighting system. This is important, for if the light on mill rolls were different from that outside the hood, eye strain would be produced with resulting discomforts and hazards.

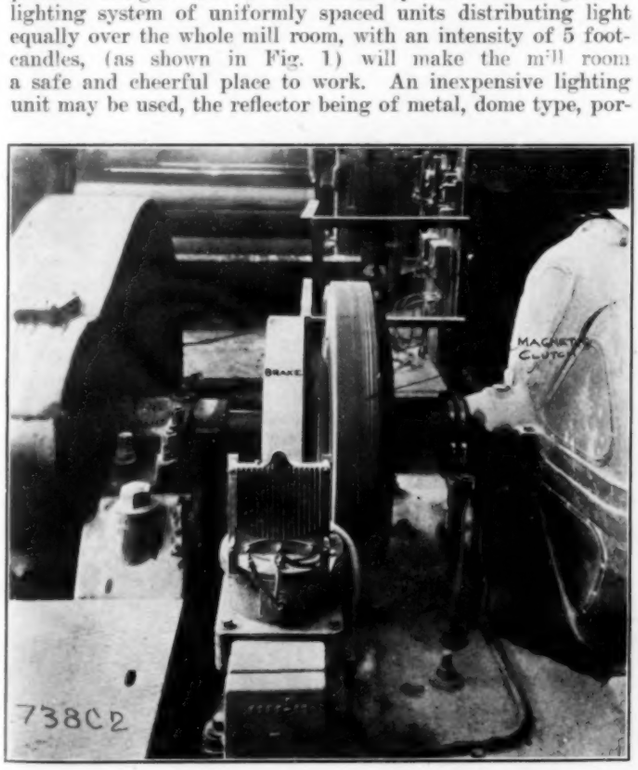

FIG. 2 WIRING FROM SWITCH TO MAGNETIC CLUTCH

Ventilation and cleanliness are equally important with mechanical safeguards. It is possible that a workman can operate for a lifetime a machine having not a single safeguard, but not so, if he is compelled to work in a poorly ventilated, dirty room, for he may eventually become as much, if not more, a physical wreck, as if he had been injured on his machine. Bad ventilation and dry, dusty atmosphere dull the workman, and slow down his productiveness. In mill rooms the installation of a ventilating system is absolutely necessary. Oftentimes natural ventilation may accomplish fairly good results, especially in a small mill room having a high ceiling. However, it is impossible to handle a few pigments, such as lampblack, zincs and leads, as well as soapstone, satisfactorily, without mechanical ventilation. The ideal ventilating system is one which will heat, ventilate, clean and humify the air; but local conditions and first cost often prevent a near approach to this ideal. Because the maintenance of air washers handling rubber pigments has been difficult, many systems have been installed without the washers, with success. A brief description of such a system is as follows:—

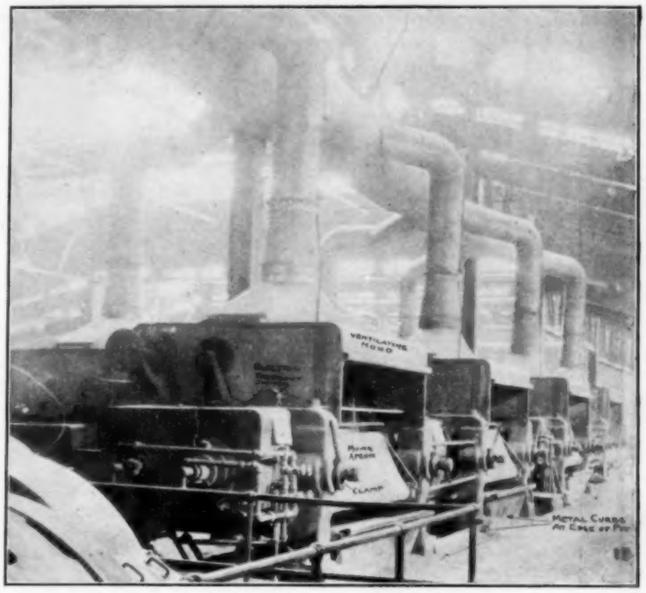

FIG. 3 HOOD AND AIR DUCTS

Carrying Off Heat, Dust and Fumes

Heat, dust, and fumes arising over the mills are carried away by an exhaust system. Each mill is provided with a sheet iron hood covering the mill. The under side of this hood should not be less than 6 feet 6 inches above the floor upon which the workman stands. (Fig. 3 illustrates this hood and the air ducts.) The two sides of hood over the housings are enclosed with sheet iron, but the front and rear are open. However, conditions often demand that canvas curtains on spring rollers be mounted upon the front or rear of hood to prevent the operator actually throwing compounds across the rolls and out on the other side of the mill. The preferred type is the ordinary box style of hood with the air duct connected to the middle of the top through a flared connection. This style of hood insures that the air currents carrying dust and heat from workmen will go directly to the middle of the top of the hood, where the duct connection is made. An alternate type of hood is also used to great advantage. This type of hood has a so-called false ceiling which makes a small space through which the air passes near the outside edges of the hood. This small space creates a higher

velocity near the edges of hood. There is also an opening in the top of this ceiling directly into the air duct. This alternate type does not carry all the dust laden air directly from operator to the middle of the hood. It has the objection of carrying a great portion of the dust to the front or rear edge, where there is a possibility of its rolling out from underneath the hoods, and it is necessary in order to overcome this last objection, to maintain a very high velocity of air which will actually carry away all of the dust.

In the preferred type a slower air velocity may be maintained, and it is found that near the center of the hood a considerable amount of the dust actually drops back on to the rolls and is mixed in with the rubber. This is one of the best features of this type of hood for it does away with the necessity of an air washer, and the small amount of dust which is carried away through the ducts is easily collected. The

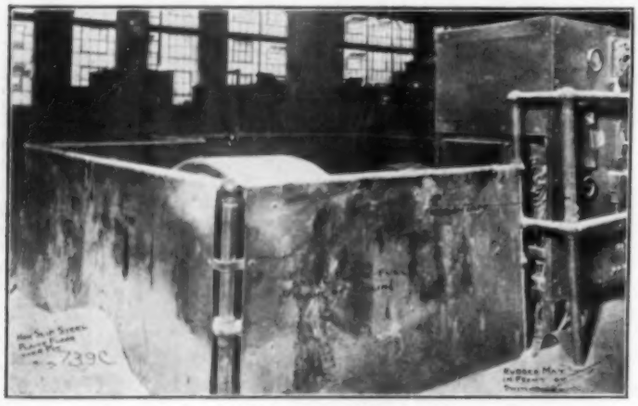

FIG 4 EXAMPLES OF GEAR GUARDS AND PIPE RAILINGS

hood should be connected to the air ducts by a flexible connection so that the vibration created on the mill will not be carried to the ducts and cause leaky joints. The ducts are carried to a centrifugal multivane exhaust fan which discharges into, preferably, a vertical flue carried to the top of the building. In the case of a one story building it is preferable to carry this exhaust flue at least forty feet above the ground level. At the base of this flue is a collecting chamber located below the entrance of the fan duct, into which nearly all the dust descends by gravity and may be removed through a cleaning door. For an 84 inch mill the volume of air for the preferred type of hood is thirty eight hundred (3800) cubic feet per minute, at a velocity of thirteen hundred (1300) feet per minute. The static pressure necessary to be maintained in the ducts varies according to the design of the ducts and the length of runs. Such pressure will rarely exceed one and one-half (1½) inches of water.

In order to off set the large volume of air removed from the mill room through the hoods, it is necessary to feed in fresh air. In summer time this is most simply accomplished by opening the windows, but in winter it is necessary to force heated air into the room by fans. This air ought to be heated to about ninety (90°) degrees Fahrenheit, and distributed equally over the entire room. It is also possible, in order to save expense of heating the entire volume of air, to recirculate a portion fed into the flue by exhaust fans, and also to draw air from other portions of the building, preferably from stair and elevator towers.

Vacuum Cleaners Useful

With the best type of ventilating system, as described, there is still an opportunity for dust to collect in various parts of the mill room. Perhaps the most frequent cause is from dusting batches of stock with bags of soapstone. This dust will accumulate on the floor and stock racks. To keep these parts of the building and floor in the cleanest condition a vacuum cleaner is advisable. With this system of cleaning there is no dust stirred up, as is the case with brooms or brushes, and the cleaning is more easily facilitated. With the vacuum cleaner system one man under ordinary circumstances, ought to clean thirty-five hundred (3500) square feet of floor per hour. This system is also very desirable to clean walls, ceiling, pipes, machinery and equipment and motors.

Another aid to cleanliness is the running of curbs around all pits, so that rubbish, etc., may not be kicked into them.

Safety in Operation of Calenders

The various methods of quickly stopping mills, previously described, are equally adaptable to calenders. The dynamic braking of motor is perhaps most simply applied and operated and requires not extra floor space. A throwout bar is necessary in both front and rear of calender, and this bar should be of steel rod or pipe and be placed full width between calender housings.

Signal bells or their equal, should give warning each time the calender is to start or stop; one bell to be so connected that any workman may signal when he desires the calender started or stopped, and another bell directly connected with the motor controller or other starting and stopping device. The latter bell will automatically give warning to all workmen. If calenders are operated in trains, the safety appliances should be so arranged that operation of any one of the safety switches on the various calenders will instantly stop the entire train. The operation of a train of calenders should be as a unit, and under the control of one operator, the only person who can start the machines.

All switches and control boards should be of the enclosed type, making it impossible for the operator to be in contact with live parts. Control panels are best situated in a separate room open only to authorized electricians. Rubber floor mats are necessary in front and rear of all control boards. (Fig. 5.)

Feeding stock into calenders has caused more accidents on these machines than any other operation. Nearly all of them resulted from feeding fabric or sheet rubber into the calender rolls, and into windup. Statistics show that comparatively few accidents have occurred from feeding batched gum, and there is no good reason why any should occur. A sheet metal table about twelve inches wide and the same length as the rolls, located about six inches below the bite of the rolls, will hold the gum while feeding. If it is necessary to feed small pieces of gum this may be done with the aid of a wooden paddle or pusher.

Feeding fabric or sheet gum is not so easily accomplished, and it is necessary for operator to place his hands close to the rolls, unless it is possible to use a guard which will also assist in starting the fabric into the rolls. Although numerous efforts have been made, it seems that no really efficient guards of this type have been devised, and experimental ones have generally met antagonism from the workmen as being a hindrance to rapid and successful work. Such a safeguard is most needed to feed sheet stock between closed rolls, but the space available is not sufficient to provide safety without impeding production by making it impossible for a workman to place his sheet within a reasonable distance from the rolls.

Calender Guards

If the calender does not require the two bottom rolls to be in contact with each other, and if the bottom roll is used only as an idler roll to return the stock to other side of calender, then the bottom roll should be lowered about three inches, a sufficient opening that a man's arm can pass between the rolls and not be pinched. Where the rolls cannot be separated to such an opening, it may be possible to separate them to such an extent that a guard can be used successfully. A guard used in several factories consists of two horizontal steel plates about 1½ inches apart, extending in between the rolls. The lower plate does not extend so far inwardly as the upper plate, and this allows workman to place the stock onto the lower roll; and if the travel of the roll should carry his fingers forward they will strike the upper plate without harm. To be successful, this guard must be constructed very heavily, and be very rigidly attached to the machine. A scraper bar is attached to the lower section of the guard after the guard is in place, and so adjusted to the roll that there is only a very small clearance between the scraper and the roll. This scraper is for any stock which may get around the lower roll and which would have a tendency to roll up under the guard and bend it out of shape. It must be urged most forcefully that a man who is working on a calender with separated rolls shall never be transferred to another calender having its rolls in contact, for the knowledge of not being subjected to danger on the first type forms a habit of placing

the hands between the rolls, and this habit will unconsciously be continued on the latter type and result in severe injury.

All wind-ups and let-offs should have a stationary handwheel for adjusting the tension in stock. This can be accomplished by mounting the handwheel on the windup bearing, the outside of the bearing having screw threads upon which the handwheel adjusts itself against the friction disc.

To hold the stock shell bar into the windup spindle, a smooth ring should slide on the spindle and cover the end of bar. This ring can be locked in position by a pin with a spring. No projecting set screws or pins should be placed on any revolving part of the windup.

All idler rolls ought to be placed as far as possible from calender rolls. Particularly is this true where the stock passes between the idler and the calender rolls, for serious accidents have occured where the operator was caught by the stock and drawn between the rolls.

Gear guards and pipe railings as described under the subject of mills, are equally adaptable on calenders. (Fig. 4 illustrates excellent guards.)

Non-slip floors are particularly necessary around calenders. A concrete floor with carborundum treatment, previously described, will not become slippery from soapstone because the grains of carborundum cut the pigment and prevent the latter polishing itself into the floor finish. Between the housings of the calender it is usually not practical to lay a concrete floor, and therefore, a metal floor predominates. This metal floor surface ought to be rough. Objections are often heard against this, and it is contended that a rough floor may damage the tail end of the stock which drags along the floor before being wound up. However, this objection is greatly overdrawn. (Fig. 5 shows such a floor under a calender which has been doing a high grade of work for years.)

Illumination for calender work is important, not only to safeguard the workman, but particularly to produce work of highest quality. Too many calenders are being operated with local lights attached to the machine. The general lighting system described for mill rooms is recommended for calender rooms, except that the maximum amount of light should be given the calenders, and a lower intensity in the aisles. The intensity on the calenders ought to be 10 foot-candles uniform lighting, and about 5 to 6 foot-candles uniformly in the aisles. If glare is eliminated this difference in intensity will not produce eye strain.

The tendency in calender work has been toward increased width of stock and greater lengths, which has produced rolls a stock of great weight and unwieldy size, and consequent greater chance of injury to operators. Careful consideration of methods of handling heavy rolls of stock becomes very important. An electric or air hoist mounted on a trolley is perhaps the simplest and quickest means of lifting these rolls.

A calender may produce excessive heat or fumes, making it advisable to install a ventilating hood above, and connected to an exhaust fan. However, it is far better to have a high calender room, preferably one story, with saw-tooth skylights to give good ventilation and light. If the room has a low ceiling then mechanical ventilation is necessary, especially during summer months and times of high humidity.

Where excessive soapstone or stock dusting accumulates on floor under calender windup and letoff, a suction system should be provided. This dust should fall onto and through a latticed or perforated floor into a chamber from which it is drawn into a duct and thence to a fan exhausting into a stack as described for mill room ventilation.

The vacuum cleaner principle has been applied to the cleaning of liners and this obviates most of the flying dust around calender letoffs and windups. A vacuum cleaner is of even more importance in a calender room than in a mill room, for in addition to the benefit to workmen, there is an extreme necessity for cleanliness of calendered stock.

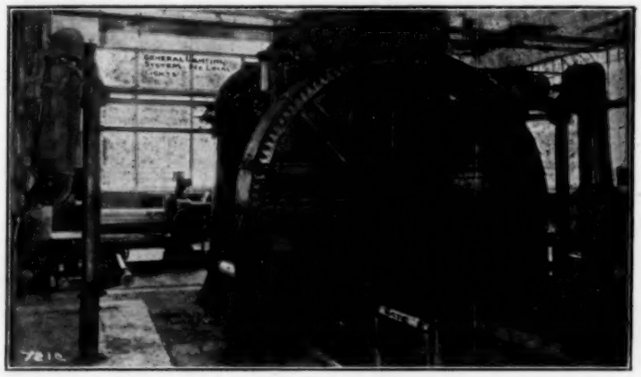

FIG. 5 NON-SLIP FLOOR UNDER CALENDER

All pits and openings in floors should be free from rubbish and grease, and should have proper curbs around them.

The foregoing descriptions have covered mechanical safeguards which for a large part depend upon a little common sense on the part of workmen in providing personal care. Workmen should be educated to know thoroughly the dangers which a safeguard covers,that they may furnish the precautions which the safeguard cannot. It may be possible to safeguard a machine so thorougly that it would be impossible for a workman to injure himself deliberately, but with the result that the workman would eventually dismiss from his mind any thought of danger. It would be folly to place such a man on another machine which cannot be so well guarded. Thorough education in safety is, after all, the most important requirement, and it not only provides protection in his mechanical duties, but it expands his mental capacity and alertness to provide protection for himself and his fellow men at all times, everywhere.

The Origin of Latex

In a long paper by Dr. W. Bobiloff, which appears in the Archiev voor de Rubber-Cultuur, the origin of latex is investigated as revealed by experiments with girdled trees. When trees are girdled low down on the trunk, the flowing in of latex from the roots to the tapping cuts is interrupted. When the trunk is girdled up above, the flowing in from the top is impossible. When trees were girdled below as well as above, the flowing in of latex was impossible from those parts of the trees situated above and below the area defined by the girdles. Finally, a number of trees were pollarded and their yield registered. The yield was registered a considerable time before girdling and some months afterward.

The results obtained hereby can be summarized as follows:—

(1) When girdling below on the trunk, for a short time a small decrease in yield is found, and afterward an increase of yield is obtained. During the time of wintering only is a decrease observed, which later on is followed by an increase in yield.

(2) The trees girdled above in the trunk showed an inclination to decrease their yield, having been girdled.

(3) When the trees were girdled above and below the trunk, the decrease in yield was much more marked than when girdled above on the trunk only.

(4) If the trees are pollarded, the decrease in yield is still more marked.

(5) The increase in yield with trees girdled below can be explained by the favorable conditions produced in those trees so far as food supply is concerned. Above the ring and near the tapping cuts storage of starch took place. The continued high standard of yield with trees girdled below indicates that the main body of latex obtained by tapping is derived from the trunk itself. From the foregoing tapping experiments, it cannot be decided how the roots of normal trees participate in latex-yielding.

(6) It may be expected that the latex formation in the under trunk of budded trees has no direct influence on the yield of latex of these trees. It may be observed from the above that the yield of a tree remains a high one without the existence of any communication between the latex vessels of the trunk and those of the roots.

The Manufacture of Radiator Tubing

The demand for this material has developed into huge dimensions during the past few years, and particularly since the close of hostilities. It is, of course, used on almost all internal combustion engines and forms a flexible water-carrying connection between the radiator and the water jacket. It is made in all sizes, ranging from ¾ inches inside diameter to 5 inches, and there are several methods of construction.

The chief method is that wherein the tubing is made of solid rubber, the outside being covered with a very strong durable brown duck. The other kind of radiator tubing is made on the insertion principle—that is with one, two or three plies of fabric embedded in both outer and inner walls of rubber.

In the case of canvas-covered tubing the following are the sizes and thickness of walls, but of course, the manufactures of the different firms may vary very slightly:—

Inside Diameter.	Thickness.	Inside Diameter.	Thickness.	Inside Diameter.	Thickness.
⅜ in.	5/32 in. wall.	1⅝ in.	7/32 in. wall.	2¾ in.	¼ in. wall.
⅞ in	" "	1¾ in.	" "	3 in.	" "
1 in.	" "	2 in.	" "	3½ in.	" "
1⅛ i.n	3/16 in. "	2⅛ in.	1/4 in. "	3½ in.	" "
1¼ in	" "	2¼ in.	" "	3¾ in.	" "
1⅜	" "	2⅜ in.	" "	4 in.	" "
1½ in.	7/32 in. "	2½ in.	" "	4½ in.	" "

The brown covered duck is first proofed on one side in the spreading machine, and three coats of the following compound should be sufficient to enable the rubber face to adhere strongly to the tubing:—

Smoked Sheet or Crepe Rubber	19	0
Whiting	10	0
Sulphur	6	0
Litharge	10	0
Reclaim	5	0
	50	0

To reduce the above to a suitable dough would require about 4 gallons of naptha or roughly 40 pounds. The rubber tubing is forced through the tubing machine, as this method is the most satisfactory both from the labor-saving point of view and also because in use it gives much better results than when the tubing is built up by hand in successive plies, which are always liable to separate.

Tackiness Necessary

When the tubing must of necessity be built up with plies of rubber it is essential that the compound to be used should have a certain amount of tackiness, otherwise it will continually require solutioning, with the consequent increase in labor cost. The following suggested compound would be found suitable for the purpose:—

Crepe Rubber	15	0
Reclaim	5	0
Mineral Rubber	4	0
Whiting	10	0
Litharge	10	0
Sulphur	5	0
Vaseline	1	0
	50	0

If the tubing is to be extruded on the forcing machine a commoner quality may be used, and therefore more reclaim and a certain amount of pure cured rubber waste or buffings can be incorporated without any disadvantage.

The following compound will be found suitable in every way, and, moreover, is fairly light in specific gravity:—

Smoked Sheet	10	0
Mineral Rubber	4	0
Creosote Oil	4	0
Motor Tire Reclaim	20	0
Ground Waste Rubber	20	0
Barytes	10	0
Whiting	10	0
Sulphur	1	0
Litharge	1	0
	80	0

India Rubber Journal, London, England

In mixing the above the ground waste rubber should be added to the raw rubber along with the oil and then the other ingredients added.

The tubing is extruded from the machine in 63 foot lengths, chalk being blown inside by the special attachment provided for the purpose. If possible, the material should be placed immediately in straight lengths on the making-up table and not coiled in a tray as with ordinary tubing. The size of the tube should be just a shade under the size of the mandrel which it is to go on.

Having inserted one end of the steel or aluminum mandrel in the tube, the other end of the tube is plugged with a special attachment, which has air supplied to it at about 10 pound pressure.

By gripping the tube on the mandrel lightly and turning on the air pressure, this distends the tubing so that it slides on the mandrel quite easily until the air is again turned off.

Tubing Is Coated

The tubing is now given a coat of thin solution and allowed to dry. In the meantime the proofed duck is cut up into strips of the required width at an angle of 45 degrees and is formed up into a 60 foot length or slightly over.

The width cut should be such as to allow an overlap of about ⅜ inch.

Having placed the strip of canvas alongside the mandrel—rubber face downward—the worker starts at one end guiding the duck on with the left hand and rolling it down with the right. When the canvas covers the rubber entirely the point at the overlap running the whole length of the mandrel is solutioned with the same compound used for proofing, and a thin strip of rubber about 1-16 inch thick is rolled down over the joint, thus making it a strong and secure one. This rubber stip, which is about ¾ inches wide, can be forced through the tubing machine, and if done in this way the edges are already tapered and, moreover, are more regular than if cut by hand.

In the case of insertion tubing a single or double warp wigan is usually adopted and ordinary garden hose fabric would serve the purpose well. The inside lining is forced through the tubing machine in multiples of 60 feet, being cut off into suitable working length and put on the mandrel with the aid of compressed air. After solutioning, the canvas is rolled on until one, two or three plies are obtained. The outer covering of rubber can be put by placing the mandrel through a tubing machine which has a hollow screw. This method comes out expensive, however, if orders are not very large. The other method is to cut a sheet of rubber of the required width and roll it by hand. In the case of both canvas covered and insertion radiator tubing, the material is spirally wrapped with strong duck or twill before vulcanizing, and this is generally done on a machine having three revolving rollers, being electrically driven, and commonly known as a hose-wrapping machine.

Cure Should Be Low

In order to avoid weakening the fabric the cure should be as low as possible, and the compounds previously given are suitable of a cure of 30 minutes rise to 35 pounds and 35 minutes at 35 pounds.

After curing, the cloth is taken off by hand and the finished tubing taken off the mandrel with the aid of compressed air, which is blown between the rubber and the mandrel.

Radiator tubing is generally asked for in lengths of 3 feet and 6 feet and only occasionally in 60 foot lengths.

It is, however, from a manufacturing point of view, inconvenient and costly to make in such short lengths, and it has been found that 30 foot and 60 foot lengths are the most economical, these, of course, being cut up into the shorter lengths.

Owing to the cost of cotton fabric prices have increased, these varying from 10d per foot for ¾ inches to 4s per foot for 4½ inches. The demand seems likely to increase for some time to come.

Foreign Markets for Rubber and Rubber Goods

In reply to numerous inquiries regarding the foreign markets for rubber and its manufactures, the consular officers have transmitted to the Bureau of Foreign and Domestic Commerce, Washington, D. C., a number of reports, the following being a summary of some of those received from Europe and Latin America. These reports appeared in "Commerce Reports," published by the Bureau.

Denmark

(Consul General William E. Gale, Copenhagen, Aug. 13, 1920.)

Only three plants in Denmark are engaged in the manufacture of rubber goods, and these concerns, according to 1914 statistics, employed 114 men and 115 women. Their production amounted in 1913 to a value of 1,800,000 crowns (1 crown = $0.268), specified as follows: Bicycle tires, 810,000 crowns; tires for automobiles and motorcycles, 85,700 crowns; inner tubes, 38,000 crowns; general rubber goods, 567,600 crowns; finer grades of rubber manufactures, 110,000 crowns; rubber linen, 30,000 crowns; and rubber clothing, 113,000 crowns. As will be seen from the above, the main production is that of bicycle tires, as a large percentage of the population in Denmark uses the bicycle.

Included under "general rubber goods" are such materials as elastic ribbon, rubber matting, rubber soles, etc., and by "finer manufactures" is meant special technical and hygienic articles. Rubber clothing includes principally caps and coats.

Imports for domestic consumption in 1913 amounted to a value of 6,289,000 crowns.

There is a good market for rubber goods in Denmark, and during the last two years the importation of tires has steadily increased, with American tires very much in demand. The reason is given that American are superior to English, French, or Italian makes. The general terms of payment are 3 months' credit or 2 per cent discount within 30 days. If an extensive trade is to be built up, credit terms should be granted or payment not made obligatory until delivery of goods in the Copenhagen free port.

Switzerland

(Consul Lewis W. Haskell, Geneva, July 31, 1920.)

During 1919 the Swiss imports of raw and scrap rubber reached 4,477 quintals (984,940 pounds), valued at 3,204,133 francs ($608,379), as compared with 1,362 quintals (299,640 pounds), valued at 1,178,651 francs ($208,179), for the previous year.

According to the last military census, there are 15,000 automobiles and 2,000 motor trucks in Switzerland. Clincher tires are generally used for automobiles, but owing to the importation of hundreds of American motor cars the demand for straight-side tires is constantly increasing. The sources of supply for rubber tires are France, Italy, England, and the United States, in their relative order. Solid tires are manufactured in Switzerland and imported principally from France and Italy.

Imports of Rubber and Rubber Materials and Manufactures

Swiss statistics of imports give the following figures and classifications as to the arrival of rubber and rubber goods during 1919 as compared with 1913 and 1918:

Classification.	1913	1918	1919
India-rubber tubes, hose, pipes without internal layers of other materials	$30,967	$43,584	$147,793
India-rubber tubes, hose, pipes with internal layers of other materials..	1,007,358	358,956	1,986,313
Strips, sheets, plates, plugs, etc., of india rubber without layers of other materials	287,578	81,890	1,305,967
Plates, rings, strips, etc., of india rubber with internal layers of metal or textile materials	203,657	119,086	716,280
Footwear of india rubber	80,674	19,741	248,693
Fabrics combined with india rubber for industrial use	49,553	70,689	87,165
India rubber of gutta percha applied to fabrics or other materials; waterproof sheeting	60,795	12,146	60,092
Articles of india rubber or gutta percha n. e. s.	290,716	121,637	231,547

Countries Sharing the Import Rubber Trade

In the first four classes in the foregoing table France supplied the greater per cent of the shipments. Great Britain and Italy also figured in this trade, but the part played by the United States was small. However, in the rubber-footwear trade the United States led, followed by Austria. The value of shipments from the United States amounted to $177,691.

Market for rubber boots is not favorable, but rubber shoes find a ready sale. These goods are imported from America, France, England, and Italy. This year a great many rubber shoes were supplied by Austria. These, although very cheap, are of excellent quality and of a style well liked by the people here. In pre-war days Russia and Germany were the principal sources of supply.

Electricity and motors have diminished the use of many mechanical goods; leather is easily obtainable here, and rubber belting is, therefore, little if ever used. There were no imports of rubber belting in 1918 and 1919. In 1913 the total value of imports reached $3,570. Metal is generally used here for packing purposes in preference to rubber.

Other Rubber Goods

Goods classed as "other rubber goods" are supplied by France, Italy, England, United States, Germany, and Austria, and the market conditions are good for most of them. These articles are distributed by jobbers, retailers, and commission agents. Payments are generally effected by consignment, f. o. b., or cash with order.

Gabardines and rainproof cloth, such as oilskins, etc., of special styles, are worn here; but as a rule rubber clothing is little used in Switzerland.

There are five factories in Switzerland manufacturing cables and rubber-insulated wire. Wire is greatly used, but this article has to be of a special construction, with insulation consisting chiefly of paper. The Italian firm of Pirelli makes the Swiss specification, and most of the wire sold here is obtained from this concern. The Swiss Government is the principal buyer of wire and cables, and bids must be submitted for contracts.

Regarding the market in rubber soles and heels, as leather is cheap in Switzerland substitutes are in little demand, but soles to be tacked on are salable if cheap enough. As concerns round heels and leather center heels, very cheap qualities are mostly in use.

Cheap rubber toys are imported from England, France and chiefly from Germany. During 1920 a great many toys have been imported from the latter country at very low prices. Toys imported from these countries appeal to the people because of their design. Imports from the United States are small.

Friction tape manufactured in Switzerland is of a poor quality. American tape is preferred, and would find a ready sale if deliveries could be made within a reasonable time.

As concerns druggists' sundries, market conditions are very favorable. Sponges, syringes, hot-water bottles, tubing, etc., are in good demand. These articles are imported mostly from England, America, France, Italy, and Germany.

United Kingdom

(Consul H. C. Claiborne, London, England, Aug. 26, 1920.)

The total number of rubber workers in the United Kingdom in January, 1920, was estimated at 71,000 (37,000 males and 34,000 females). In these figures are included a small proportion of rubber workers employed at establishments other than india-rubber manufacturing plants.

In April, 1919, the number of firms engaged in all branches of the india-rubber manufacturing industry, including the manufacture of rubber goods, was 464, according to the Ministry of Labor.

It is ascertained, with reference to the marketing of belting, hose, packings, and similar goods, that the usual method of supplying this class of rubber goods is through the medium of rubber factors, or companies, selling engineering supplies. There is, as well, a substantial amount of business, especially rubber belting, which is done direct with the larger plants, and there is also a market for rubber goods with manufacturers of articles who use a certain amount of manufactured rubber goods as a component part of their production.

The total imports of rubber boots and shoes reach a large figure, but an increasing production in British plants is expected. British firms usually sell such goods, including canvas shoes with rubber soles, and plimsolls, on open account, and as a rule to the wholesalers, who in turn sell them at an agreed selling price to the retailer.

There is not a heavy demand for druggists' sundries in this market, but there is said to be a chance for the sale of American bathing caps. American rubber soles and heels are too expensive, and due to the difference in styles, rubber clothing is practically all of domestic make. However, there is a market for hard-rubber goods, since the bulk of the trade was formerly in German hands.

Rubber Imports for the First Seven Months of 1920

The imports of raw and manufactured rubber for the seven months ending July 31, 1920, as compared with like periods of 1919 and 1913, were as follows:

Kind of rubber	January-July 1913	January-July 1919 a	January-July 1920
Crude	$66,627,392	$73,443,905	$76,934,241
Boots and shoes	323,889	400,673	2,494,144
Tires and tubes	8,444,837	4,109,905	15,061,257
Other manufacturers of rubber	2,121,496	1,457,263	2,164,118

a Full statistics for 1919 have as yet not been published.

Share of United States in Imports of Rubber Manufactures

Of the imports of rubber manufacturers, excluding tires, tubes, waterproofed apparel, and boots and shoes, the 1916 imports amounted to $4,714,137, of which total the United States supplied $4,334,382; the 1917 imports reached $2,299,445, with the share of the United States amounting to $2,048,810; and in 1918 the United States furnished this class of goods to the value of $1,126,910 out of a total import valued at $1,297,796.

Conditions in the Scottish Rubber Trade

(Consul George E. Chamberlain, Glasgow, Scotland, July 28, 1920.)

The rubber manufacturing industry of the Glasgow consular district is of considerable importance, there being five concerns thus engaged, employing approximately 2,200 people. Their products are chiefly those known as mechanical goods, such as packings, hose, belting, etc., although one concern produces tires and a second waterproof clothing.

With the exception of bicycle and motor cycle tires, all rubber tires used in the district are received from other districts in the United Kingdom or are imported from other countries. The imported tires are chiefly of American origin and are estimated to comprise about one-third of the total in use at the present time. Tires are distributed through agents of the manufacturers, jobbers in accessories, garages, etc., and the usual terms of payment are 5 per cent discount for payment in seven days, 2½ per cent for monthly settlement or 30 days net.

There is not a large demand for rubber boots and shoes here, due to the fact that they are not as commonly worn as in the United States. Dealers as a rule carry only small stocks; in fact, some retail shoe dealers do not handle them at all. The majority of these goods are imported chiefly from the United States and are handled by agents in much the same manner as are tires. Industrial rubber goods are produced in the district, much of the local consumption being of domestic origin. A considerable quantity of this class of manufactures is exported.

American rubber goods have a very satisfactory standing in the Glasgow market, but there is a tendency on the part of the consumer to buy domestic goods when they are obtainable, and at an equal price. American tires, rubber boots and shoes, and druggists' sundries are all well known and meet with a good demand. In other lines local competition is stronger, and foreign products meet with less success.

Colombia

(Vice Consul Samuel J. Fletcher, Cartagena, Aug. 5, 1920.)

Importations of rubber tires into Colombia have been constantly gaining during the past few years, and due to the increasing arrivals of automobiles the demand for tires should become still greater. Practically all the tires are imported from the United States by hardware importers and automobile dealers. The greater number imported have been small sizes and of the clinches type. Rubber tires for coaches (solid tires) fall under classification No. 399 of the Colombian tariff regulations and are assessed at the rate of $0.02 per kilo (1 kilo = 2.2 pounds) plus surtax of 2 and 5 per cent. Pneumatic tires fall under classification No. 851, and are assessed at the same rate as solid tires. In 1913 coach tires were imported chiefly from the United States, with the United Kingdom a second source of supply, but in 1919 the United States monopolized this class of imports. In 1919, pneumatic tires were imported to the value of $23,355, the share of the United States being $22,241.

The market here is a small one for rubber boots, but a good one for rubber-soled shoes, especially rubber-soled canvas shoes. The United States furnishes the greater per cent of imports in this class. Import duties on rubbers are $1 per kilo; on leather shoes having rubber soles, $1.70 per kilo; and on canvas shoes with rubber soles, $1.50; all these plus surtaxes of 2 and 5 per cent. Of an import in cotton shoes with rubber soles in 1919 of $8,239, the United States supplied $7,539.

In the importations of rubber goods for industrial purposes there have been marked increases. Small supplies are kept on hand by the leading hardware dealers, and their terms are the usual one, two and three months' time. Rubber belting falls under classification No. 392, with a duty of $0.01 per kilo; rubber hose, classification No. 400, with a duty of $0.01 per kilo; rubber washers, classification No. 381, with a duty of $0.20 per kilo; all of these plus surtaxes of 2 and 5 per cent.

Imports of Belting, Hose, Washers and Packing

The following table gives the imports of rubber belting, rubber hose, and rubber washers and packing for 1913, 1918, and 1919:

Articles and sources of supply	1913	1918	1919
Rubber belting:			
United States	$22	$481	$1,284
United Kingdom	267	....	....
Rubber hose:			
United States	1,408	775	1,678
United Kingdom	132	15	252
Germany	38	....	....
Rubber washers and packing:			
United States	276	2,241	2,025
United Kingdom	....	173	15
Panama	....	....	90

Small quantities of rubber clothing and druggists' sundries are imported. Great Britain supplies the few imports of clothing, and insulated wire and cables come from the United States, imports of the last named being on the increase. Cotton cloth, rubber-coated, falls under tariff classification No. 412, with a duty of $0.90; cotton cloth, rubber-coated, for ponchos, under classification No. 413, with a duty of $1.10; woolen cloth, rubber-coated, $1.35; plus the usual 2 and 5 per cent surtaxes. Rubber, in bulk, purified or not, falls under classification No. 390, with a duty of$0.30 per kilo; hard rubber, vulcanized, for dental uses, under classification No. 391, with a duty of $1.30, plus the surtaxes; insulating wire and cables, under classification No. 1051, with a duty of $0.01; rubber soles and heels, under classification No. 407, with a duty of $0.35; rubber toys, under classification No. 397, with a duty of $0.60; rubber matting, under classification No. 409, with a duty of $0.50; rubber friction tape, under classification No. 802, with a duty of $0.02; and druggists' sundries of rubber, under classification No. 718, with a duty of $0.25. All plus surtaxes of 2 and 5 per cent.

Dominican Republic

(Consul W. A. Bickers, Puerto Plata, June 24, 1920.)

There are no factories producing rubber in this district, nor are statistics available showing the various classes of rubber goods imported, but the total imports of all manufactures of rubber into the Dominican Republic were valued in 1913 at $31,032; in 1917 at $84,266; and in 1918 at $143,976. It is estimated that this district would use about 30 per cent of the total import.

Imports consist, for the most part, of tires and tubes, a few rubber soles and heels, and a few druggists' sundries, with 95 per cent of these imports coming from the United States. The only import demand is for rubber tires and tubes. All merchants desire long credits, and business usually goes to the house that will grant the longest credits. Motor cars in this district are almost entirely of American make. There are a few motor cycles in use and many bicycles; also carriages in towns usually have rubber tires.

Mexico

(Consul Cornelius Ferris, jr., Mexico City, Aug. 2, 1920.)

Two small rubber factories are in operation in the City of Mexico, both of which manufacture automobile tires and raincoats. The making of other articles than tires has not

been developed beyond an experimental stage. It is estimated that to meet the demand of the entire Republic of Mexico there should be an output of 600 to 1,000 tires per day. Practically the entire consumption of manufactured rubber goods in Mexico is imported from the United States, though previous to the war some sundries were received from Germany and a very few Italian and French automobile tires.

Local competition has considerably reduced the importation of tires from the the United States, there being an import duty of 1 peso ($0.498 in United States currency) per kilo (2.2 pounds). The Mexican market is overcrowded with American tires, while the outlet is a restricted one. Practically all sizes are in use. Two American concerns maintain offices in Mexico City, and a few manufacturers cover portions of the field with traveling salesmen, while a few others have agencies with local dealers.

There is a strong demand for sport shoes not only for this consular district but for the whole Republic. However, American firms are reluctant about extending terms of draft against delivery. On the other hand, the Mexican importer dislikes to be forced to advance cash with order when long delays under present transportation and manufacturing conditions are considered. The market possibilities will continue so as long as conditions remain unsettled.

The business of the mining and oil fields is almost entirely controlled by a few well-known brands of belting, packing, and hose, long established in the Republic.

In most cases small dealers lack financial ability to import direct and find it to advantage to purchase from Mexico City stocks. In the sole and heel trade most manufacturers have yearly contracts for direct importation, and it is impossible to ship direct to small dealers. American toys are too expensive for this market, the control being in the hands of the Japanese, who supply a cheap grade.

Venezuela

(Consul H. C. von Struve, La Guaira, July 11, 1920.)

In 1918, the only year for which definite statistics are available, rubber tires were imported to the extent of 1,511 pounds, valued at $2,038. The best gauge for the required imports is the fact that there are about 2,000 automobiles in this district, and the number of tires needed can be reckoned accordingly. The cars are practically all standard American makes, and quick detachable tires are preferable. These are imported from dealers in Caracas, the tires imported from countries other than the United States are so few as to be negligible. There are practically no imports of rubber boots and shoes, nor of rubber for industrial purposes. Other imports are confined to goods used by the drug trade, to insulated wire, and rubber heels and soles.

Demand in the Maracaibo District

(Consul Dudley G. Dwyre, Maracaibo, June 28, 1920.)

The present demand for tires in the Maracaibo district is small, but with the expected increase in the number of automobiles, the demand for rubber tires will be greater. Sizes generally in use are 30 by 3 inch, 30 by 3½ inch, 32 by 3½ inch, and 33 by 4 inch. The Venezuelan customs duty on tires is at the rate of 0.75 bolivar per kilo of gross weight.

The market for rubber belting is fairly good, particularly in small sizes of 4 or 5 inches. There is also a light demand for larger sizes by petroleum companies for drilling operations. Rubber hose finds its chief demand among concerns requiring steam hose, but this use is quite limited. There is a fair demand for industrial rubber goods, and practically all imports are supplied by the United States.

Natural Coagulation of Hevea Latex in the Absence of Air, After Addition of Lime Salts

In a former publication on the natural coagulation of Hevea latex, attention was drawn to the accelerating effect of soluble lime salts, though it was then not possible to give detailed figures on this subject.

The following paper deals with this accelerating effect; it is shown that an amount of 0.05—0.10 per cent of $CaCl_2$ (= 0.02—0.04 per cent Ca) will cause complete coagulation in closed vessels within twenty-four hours. This quantity of lime salt agrees with that mentioned by Barrowcliff.

Several investigators have made hypotheses on the cause of this accelerating effect of soluble lime salts. Whitby, Campbell, Barrowcliff, suppose that this effect consists in an increased activity of the coagulating enzyme; while Eaton supposes this effect to be merely chemical. Vernet supposes that the calcium salts have a coagulating effect on the proteins which occur in the latex and in that way produce coagulation in the latex.

During the dry season of 1919 the wintering of the trees in the Experimental Garden at Buitenzorg was very pronounced; at the beginning of July all trees threw off their leaves, at the end of August the wintering period was nearly over and all the trees showed new leaves.

Every few days a measured portion of latex was coagulated spontaneously in a closed vessel in the absence of air. By determination of the weight of rubber thus obtained after approximately twenty-four hours and comparison of this quantity with the result of the trial coagulation made in the same latex, it was possible to judge whether the spontaneous coagulation was more or less complete. The figures obtained show that during the months of May and June the coagulation was always practically complete after a period of twenty hours, resulting in a strong coagulum and clear serum. At the beginning of July this changed, and coagulation was very incomplete up till the end of August. During September coagulation restored itself, and afterwards it was always ready within twenty hours.

For these trees and this tapping system (2 cuts on ¼) there appears to be a close relation between wintering and the completeness of the natural coagulation in the absence of air.

In a former communication reference was made to some methods of completing spontaneous coagulation after a period of about twenty-four hours, namely, addition of a small amount of sugar (0.2 per cent) and heating for seven to eight hours at 40 degrees C. In this communication another procedure is treated, namely, addition of small amounts of calcium chloride. In latex obtained during wintering, in the months of July and August, which latex gives only incomplete spontaneous coagulation, the above-mentioned agents all gave excellent results. Sometimes it was necessary to increase the amount of sugar from 2 to 3 grammes per liter of latex or to increase the quantity of $CaCl_2$ from 0.5 to 1 gramme per liter of latex.

Some investigators, Henri, Whitby, suppose that by using lime salt, small quantities may be occluded by the coagulum and afterwards have an influence on the finished rubber; Barrowcliff calls this influence a good one, Van Heurn is more sceptical about it. An investigation was therefore made as to the precentage of ash in rubber prepared by natural coagulation of Hevea latex under different circumstances. It was found that all the rubbers prepared by natural coagulation give nearly the same precentage of ash, though the samples prepared by heating during a short period and those with the greatest quantity of $CaCl_2$ (0.1 per cent) give somewhat higher figures.

No harmful influence on the rubber on this occluded salt could be detected. The rubber prepared with lime salts was tested by vulcanization. The average differences in inner qualities are of no practical importance. The rubber with calcium vulcanizes faster than the acetic acid rubber, but this difference agrees with the figures obtained in a former investigation of rubber prepared by natural coagulation in several ways. The uniformity in time of cure of the crepe prepared with lime salts is not, however, so good as that of the other spontaneous crepes.

Communications of the Central Rubber Station in *Archief voor de Rubber Cultuur*, Vol. N, No. 6. *India Rubber Journal, London, England.*

(Abstract of paper by W. Spoon.)

India Official Sees Bright Future

In a statement just issued, D. K. Grubb, secretary and general sales manager and one of the organizers of The India Tire & Rubber Co., of Akron, Ohio, expresses the opinion that danger of a business crisis is past and from now on there will be a general upward trend in the affairs of every well financed company that has a meritorious product behind it.

"The situation during the last few months," according to Mr. Grubb, "has simply been a demonstration of the old rule of cause and effect. Unprecedented prosperity struck the general public in all lines of endeavor; money was plentiful; seemingly everyone had it. Then ensued a nation-wide epidemic of spending.

"Unessential items were bought recklessly and due to this extravagance there came a tightening in the money market. As soon as the banks became more rigid in making loans, there was a let-up in buying. Rumors of scarce money were heard on every hand. Instead of buying two spare tires, the motorist bought one. Rather than buy new tires, he patched up the old ones.

"But, all tires wear out eventually and, if motor cars run, new ones must be bought. There are approximately 8,000,000 cars in the United States at present. In five years it is estimated there will be nearly twice that number. And every one of those cars must have tires—most of the tires coming from Akron. This situation in itself assures a tremendous tire business for years to come. In it there is no indication of impending peril for any manufacturer of good tires. As has always been the case, there will be a shortage of high grade tires—no, over supply.

"Moreover, the careful-buying lessons which the public is learning now will work directly to the benefit of conscientous tire makers. They will mark, to a large degree, the passing of "Gyp" tires and irresponsible manufacturers who turn out inferior products simply to sell them at below-list prices.

"The situation today has some resemblance to that of nearly four years ago when the Gasless Sunday and Heatless Monday incidents elicited a prolonged wail of pessimism from certain manufacturers. There were those who predicted at that time that the whole economic structure of the automobile business was tottering, that we were on the brink of financial ruin, etc.

"However, we can be thankful that the big majority of the industrial leaders of the country looked at the situation in a different light. Affairs were admittedly bad, with the war making greater and greater demands on our resources, but, instead of resting on their oars, those men saved the day by planning for the future and optimistically facing the troubles of the moment. Eventually, as every one knows, the obstacles were brush aside and there came an era of unprecedented prosperity.

"This is no time for pessimism. What we need most is conservative and sane optimism. And when the enormous crops have been harvested this fall buying will be renewed with an intensity that guarantees a successful year for tire makers and dealers, as well as industry in general."

Dunlop Increases Capital

That there is considerable activity in the rubber industry in Great Britain is indicated by reports received here, a recent indication being contained in a statement regarding the Dunlop Rubber Company, Limited, in "The Economist," which announces that the company has almost trebled its capital stock, which is now approximately $100,000,000.

An extraordinary general meeting of the Dunlop company was held in London, the report states, for the purpose of considering a resolution to increase the capital to 20,000,000 pounds by the creation of 12,500,000 one-pound shares, and a further resolution to capitalize 7,500,000 pounds and pay a bonus of three pounds free of income tax to the ordinary shareholders by the allotment of one-pound shares to that amount.

Deuster Promoted by M. & A. M. A.

M. L. Hemingway, general manager of the Motor and Accessory Manufacturers Association has announced the enlargement of the association's traffic department and the appointment of H. Deuster as its new manager.

Up to the present time, the Association's traffic matters have been handled on a joint basis with the traffic department of the National Automobile Chamber of Commerce under the direction of James S. Marvin. Recently the need for traffic services, in view of the increased rates and the general importance of railroad matters to the industry, warranted the extension of the Association's work in this field, under the direction of a traffic manager, functioning solely through the Association.

Mr. Deuster brings to his new work eighteen years of railroad experience, twelve with the Erie and six with the Ontario and Western. For four years he was chief clerk of the General Freight Department of the last mentioned railroad and since 1918, chief of the Tariff Bureau with headquarters in New York. city.

Rochester Changes Firm Name

Announcement has been made that at the last meeting of stockholders of the Rochester Tire & Rubber Co., Buffalo, N. Y., it was voted to discontinue that name and adopt the name Powertown Tire Corporation.

It was deemed advisable to make this change as there are two companies in Rochester, operating under names similar to Rochester Tire & Rubber Co., which has caused considerable confusion in mail, freight, express and credit. There has been no change in the personnel of the company or its policies.

Lee Announces Tire Reduction

Believing that present conditions in the tire material market presage falling prices within the next few months, the Lee Tire & Rubber Company of New York, has announced through its local representatives and branches, an immediate price reduction of fifteen to twenty per cent below present price lists.

It is stated that this price reduction is not in the nature of a cut price on odd or over-stocked sizes of Lee tires, but covers the entire line—fabric, cord, puncture-proof fabric and the new Lee cord puncture-proof and puts Lee tire prices back where they were before the general tire price advance of March 8, went into effect.

In the opinion of John J. Watson, Jr., president of the Lee Tire & Rubber Company, and his board of directors, conditions in the country indicate a tendency toward downward prices. And while material costs do not, at present, fully warrant these reductions, future costs of raw materials are certain to justify them.

The reductions now put in force by the Lee Company range from $3.50 on the Ford car size to $30 on the larger sizes. This means quite an item of saving to the motorist.

The new prices are:—

Sizes	Zig-Zag Non-Skid Fabric	Zig-Zag Non-Skid Cord	Zig-Zag Non-Skid Puncture-proof
30 x 3½	$20.00	$30.50	$34.65
33 x 4	32.50	49.30	49.95
34 x 4	33.25	50.65	51.60
			Cord puncture-proof
34 x 4½	44.80	57.00	71.25
35 x 5	52.30	71.00	84.95

The company is making its reduction at this time, rather than to wait until most people have put up their cars for the winter, so that the motoring public can buy tires at lower prices, when they need them and can use them in enjoying the remaining months of the riding season.

Brighton Erects War Memorial

A memorial stone and tablet, a tribute of employes of the Brighton Mills, Passaic and Allwood, N. J., to the memory of their five co-workers who made the supreme sacrifice in the World War, was dedicated with simple but impressive services, on Thursday, September 2.

The monument, which is a finely proportioned two-ton stone, has been placed on a grassy mound near the entrance to the Passaic plant, and bears a bronze tablet upon which appears the name of the Brighton boys who left their work in the mills to answer their country's call and who laid down their lives in active service.

The dedicatory exercises, which were held at the close of the day's work, were attended by hundreds of the workers in both plants as well as by many of the relatives of the five men to whose honor and sacrifice the monument stands as a lasting memorial.

News from the Trade at Large

Reduction in Tire Prices Unlikely—McKone Tire and Rubber Company Incorporates—Sterling Declares Dividends—Col. Colt Denies Rumor Regarding Financing—Cumberland Tire Organized

Reduction in Prices Unlikely

Commenting on the possibility of a reduction in tire prices the Goodyear News says:

The tendency toward a downward curve from the peak of high prices of commodities in general, caused by currency deflation and tightening of credit, has led many motorists and dealers to look for a drop in tire prices, and has caused many to delay needed purchases until the expected drop would come. The price of tires today is on the average 33 1-3 per cent less than in 1910.

Automobile tires are nearer their prewar prices than nearly every other staple article upon the merican market. The consumer is now paying only thirty-seven per cent more for tires than in 1914, whereas he is paying 253 per cent more for wearing apparel, over 113 per cent more for fuel and light, 267 per cent more for sugar and 231 per cent more for household furnishings, with practically parallel increases in prices of practically all other commodities, according to figures furnished by the U. S. Department of Labor.

Although prices of materials entering into the manufacture of tires have "gone up" the tires themselves have remained at a comparatively low level of price. For instance, fabric has increased in price between 200 and 300 per cent, labor costs have risen, as well as transportation costs, which have mounted 35 to 40 per cent.

Only skillful management and careful curtailment of waste and the usual loss in manufacture have enabled tire makers to keep the product at its present price. But with the mounting costs of nearly everything that goes into tires—there is naturally a limit to this ingenuity of management in their manufacture. And there is no indication that there will be a drop in the price of tires.

Crude rubber on the market is low in price at present. This is due to the fact that the manufacturers have bought their supply of the crude product far in advance—and, there being no buyers for the product now on the market—a decline in price naturally follows.

Another important factor in the tire situation is the added mileage and greater durability of the highly perfected tire today. Six years ago a four thousand mile tire was unusual. Today an eight thousand mile performance is a very ordinary record. Figuring conservatively upon this mileage basis alone, a 1920 tire will deliver 100 per cent more mileage than a 1914 tire and yet costs but 41 per cent more. The tire selling for $50 in 1914, cost 1¼ cents per mile based on 4,000 miles of service. The same tire now gives at least twice the mileage and costs only $70 or a cost of only ⅞ of a cent, which means that the same mileage is actually being purchased today for 30 per cent less money.

Every dealer can use these facts to advantage in making his monthly turnover move faster. He can show his customers that the present "hold back" on the part of tire buyers— will not benefit them as regards a drop in price. The Service Station man has no doubt run against the story from motorists— "that they think tire prices have been unduly inflated and that there should be a drop." It should be pointed out that tires, although much higher in quality, actually cost about 33 1-3 per cent less than in 1910; that they have never been "high priced" compared to other commodities and that it is not wise to assume that there will be a reduction.

McKone Tire Incorporates

Incorporation of the McKone Tire and Rubber Company, at $500,000 was announced recently by J. H. Rainsberger, attorney who handled the incorporation. E. W. Stevens, treasurer of the Geiger-Jones Company and E. E. Wertz were named among the directors of the new company.

The concern will have its office buildings and principal place of business in Canton, Ohio, according to Attorney Rainsberger, and will manufacture principally cord tires. While no definite information was made public regarding beginning of production, it was stated that negotiations are now under way to purchase an established tire factory in another city and begin putting out tires soon.

C. W. McKone, former general manager of the Gordon Tire & Rubber Company, of Canton, will have charge of the new company which bears his name.

Sterling Declares Dividends

At a meeting of the directors of the Sterling Tire Corporation, Rutherford, N. J., which was held September 24, the following resolutions regarding dividends were passed:

That the regular quarterly dividend of 1¾ per cent on the outstanding 7 per cent preferred stock of the corporation be paid on October 20, 1920 to stockholders of record, September 30, 1920; That the regular quarterly dividend of 2 per cent on the outstanding Series B. preferred stock of the corporation be paid on October 20, to stockholders of record, September 30, 1920; That a dividend of 1 per cent on the outstanding common stock of the corporation be paid on October 20, to stockholders of record, September 30, 1920.

Fisk Declares Dividends

Fisk Rubber Company declared the regular quarterly dividend of 75 cents a share on the common stock, payable October 1 to stockholders of record September 15.

Col. Colt Denies Rumor

Colonel Samuel P. Colt, chairman of the board of the United States Rubber Company has announced that there is absolutely no truth in the reports purporting to come from Boston and which were published in New York city on September 27 to the effect that the company will probably do extensive financing before January 1 next.

Col. Colt states that the company is in comfortable circumstances, has no difficulty in obtaining such funds as it desires on current borrowing and has no necessity for any further financing.

He further explained that the business of the United States Rubber Company is well balanced between footwear, tires and mechanical goods, the former being its largest product and the tires being but about one-third of the total product. He added: "Up to date there has been no falling off in the volume of the company's sales taken as a whole.

"The footwear business, which has been exceptionally large this year owing to last year's severe winter, is a seasonal business, the due date for all goods sold between April 1 and November 1 being December 15, which results in very large cash receipts the last two weeks of the year. The company takes advantage of all discounts in the payment of its bills and its cash on hand is ample to enable it so to do."

Export Convention to Be Held

The eleventh annual convention of the American Manufacturers Export Association will be held at the Waldorf-Astoria, New York, Thursday, October 14th. This convention will be limited to a one-day's session followed by a banquet in the evening. The keynote of the convention will be: "To obtain permanent world trade, American manufacturers must now take a leading part themselves."

The part that American exporting manufacturers must take to obtain this permanent world trade will be discussed at the convention by W. L. Saunders, president of the American Manufacturers Export Association. No effort is being spared to make this convention of real practical value to members. Eminent authorities have accepted invitations to address the convention on topics of vital importance to American busineses men.

Cumberland Tire Organized

The Cumberland Tire & Rubber Co. is the name of a new firm organized to manufacture tires in Louisville, Ky. This organization will specialize in cord and fabric tires including a Ford size. The company will manufacture in the plant of the Ten Broeck Tire Co. which, together with its cotton fabric mill, has been purchased for that purpose. F. W. O'Brien who has been identified a number of years with the tire industry, is president and general manager; A. L. Henry, of the Standard Metal Co., of Indianapolis, is vice-president and director, while S. J. Dant, of Louisville, is secretary and treasurer.

Opportunities for Export Connections

The following bulletin has been issued by the Rubber Association of America, Inc., to its members:

September 22, 1920

To Rubber Manufacturers:—

Reserved information with respect to the foreign trade opportunities mentioned in the attached, may be obtained from the Bureau of Foreign & Domestic Commerce and its district and cooperative offices by duly registered firms and individuals upon written request by opportunity number. A list of those offices is subjoined below:

Offices of the Bureau of Foreign and Domestic Commerce

DISTRICT OFFICES

New York.....734 Customhouse
Boston .....1801 Customhouse
Chicago .....1424 1st Nat'l Bank Bldg.
St. Louis.....402 3rd Nat'l Bank Bldg.
New Orleans.....214 Customhouse
San Francisco.....307 Customhouse
Seattle .....848 Henry Bldg.

COOPERATIVE OFFICES

Baltimore..Export & Import Bd. of Trade
Cleveland.....Chamber of Commerce
Chattanooga....Foreign Trade Secretary Southern Railway System
Cincinnati.....Chamber of Commerce
Los Angeles.....Chamber of Commerce
Philadelphia .....Chamber of Commerce
Portland, Ore.....Chamber of Commerce
Dayton ...Dayton Chamber of Commerce
Pittsburgh .....Chamber of Commerce

Opportunity Number

33656.—A commercial agency firm in PORTUGAL desires to secure an agency for the sale of automobile tires * * *. Correspondence may be in English. Catalogues and price lists requested. References.

33633.—A tire and rubber agency company in NEW ZEALAND desires to secure the sole agency for the sale of good tires and tubes that can be guaranteed for use on the roads of that country. Quotations should be given c.i.f. New Zealand port. References.

33598.—A cooperative mercantile company in AUSTRALIA desires to purchase and secure an agency for the sale of tires and tubes * * *. References.

33604.—A merchant in CANADA desires to be placed in correspondence with manufacturers who are in a position to export rubber horseshoe pads. Cash will be paid on delivery. Quotations should be given f.o.b. port of shipment. No references offered

3305.—A commercial agent in TURKEY desires to represent firms for the sale of * * * boots and shoes, and rubber overshoes. Quotations should be given c.i.f. Constantinople. Payment to be made in United States currency, 20 to 25 per cent to be sent with order, balance to be paid against documents. References.

33557.—A firm in BELGIUM desires to secure the general representation for the sale of tires for bicycles, motorcycles, automobiles, and trucks; * * *. References not given.

33620.—A manufacturer in SOUTH AFRICA desires to secure an agency for the sale of rubber soles and heels, canvas tennis boots and shoes, uppers for sewing soles on same (not for vulcanizing,) molds for making rubber soles, motor tires and tubes, mechanical rubber goods, rubber compound for tire repair work and retreading, also reclaimed rubber for mold work, of which samples and prices are required; * * *.

33718.—A merchant in SPAIN desires to secure an agency for the sale of textiles, rubber goods, * * * Quotations should be given c.i.f. Spanish port. Correspondence should be in Spanish. References.

33733.—A merchant in AUSTRIA desires to establish relations with manufacturers with a view to securing an agency for the sale of American goods, particularly automobile tires and fittings. Reference.

33737.—An agency is desired by an inquirer in ITALY for the sale of * * *, belting,, * * *, automobiles and accessories, and rubber goods. Correspondence should be in Italian, though English may be used. References.

Ashland to Start Production

The Ashland Tire & Rubber Company, of Ashland, Ohio, a new company, which has recently been incorporated in Ohio for $1,500,000 has their new factory completed ready for operation and will shortly be making Ashland cords, fabrics, and red and gray tubes. In addition, they will manufacture a special brand tire, which will be handled both through dealers and jobbers.

The Ashland Tire & Rubber Company is composed of men who have all had from ten to twenty-seven years experience in the rubber business, being connected with various other rubber companies in executive capacities.

The plant consists of three units, allowing 48,000 square feet of working space. The buildings being constructed of concrete with steel reenforcement and faced with brick, are absolutely fireproof and modern throughout. The most modern machinery obtainable has been installed to speed up production and cut down overhead.

Cadenhead President of Dixie

L. C. Cadenhead was elected president and general manager of the Dixie Rubber Company, Memphis, Tenn., by the directors of that company. Mr. Cadenhead succeeds E. V. Catoe, who resigned recently.

Mr. Cadenhead was vice-president before his election. Robert Newton of Poplarville, Miss., was chosen to fill the office of vice president.

M. H. Henry, of Hickory Flat, Miss., was elected secretary and treasurer, succeeding M. T. Bynum, resigned.

It was reported at the board of directors meeting that the sale of stock had been nearly completed. The factory site occupies twenty-two acres near Hollywood, Tenn. It is understood that a deep well has already been drilled and that switch tracks have been installed. Actual construction work on the plant is expected to begin in a few months.

Mid-West Association Bulletins

The following bulletins were recently issued by the Mid-West Rubber Manufacturers Association:

Amount of Rubber in Tires

SEPTEMBER 29, 1920

To Members:

Our members will doubtless be interested in the following figures published in the Bulletin of the French Rubber Planters Association as to the amount of rubber used in making the various grades of tires by a large English tire manufacturing company. They were as follows:

	pounds
Small Clincher	4
Small Clincher cord	6
Straight side	12
Truck cord	40
Motor cycle	4
Solid type	25
Small tube	1½
Medium tube	2
Truck tube	5

General average, 9 pounds.

During the war the statement was made by one of the largest tire manufacturers in the United States, and generally agreed to by a number of the other leaders, that the average amount of rubber in tires manufactured in this country was about eight pounds.

Effect of Increased Freight Rates

SEPTEMBER 29, 1920

To Members:

Increases in the prices of articles commonly used by the public due to the recent advance in freight rates authorized by the Interstate Commerce Commission should be very slight, if only enough to cover the amount of the increase on each article is added to the final price. This is shown in a recent statement by the Association of Railway Executives based on a compilation of figures made by the Bureau of Railway Economics. The effect of the increases in rates on tires and Ford cars was set forth as follows by the Association:

Tires: The rate on an automobile tire from Akron, Ohio, to New Orleans (1,087 miles) has been increased 10.67 cents.

Ford cars: On a Ford car, shipping weight 1,580 pounds, the increase in the rate from Detroit to Washington, D. C. (708 miles) is $6.08. From Detroit to Norfolk, Va. (945 miles), the increase is $5.92. To Birmingham the increase is $9.72.

Representation in Near East

Word has been received from the firm of J. S. Namy, of Nicosia, Cyprus, to the effect that that concern is desirous of representing American rubber manufacturers in that section of the Near East. The letter states that the firm in question is modern in every detail and seeks to act as sole representative of any American firm desiring an export connection in that corner of the globe. The firm asks that interested firms send their catalogs and if possible samples together with quotations and other necessary data.

Members of Mid-West Rubber Manufacturers' Association Offer Interesting Opinions Regarding Basic Reasons for Existing Over-Production in the Tire Business

The following bulletins were recently issued by the Mid-West Rubber Manufacturers' Association:

September 24, 1920

To Members:

One of our Regular Members writes us the following interesting letter on the subject of "Over-Production in the Tire Business" in response to our Bulletin 38 entitled "Gyps and Others" of August 19 last:

"Referring to Your Bulletin No. 38, I feel that the real reason for a slump in the tire business is over-production. It was brought out at the Mid-West Association meeting a month ago at Chicago that whereas manufacturers have figured on 5 tires per car per year, there is a consensus of opinion that this is too high and that 3 tires per car per year is more nearly correct. I substantiate this argument by the following facts:

5 tires @ 3,500 miles each....17,500 miles
3 tires @ 6,000 miles each....18,000 miles
2 tires @ 8,000 miles each....16,000 miles
or 2 tires @ 10,000 miles each 20,000 miles.

Assuming that at the end of the year there will be 8,500,000 machines in use, 3 tires per machine will make 25,500,000 tires required for the whole year, after the total year's production of machines has been turned out.

"The following approximate estimate of production shows that 20,625,000 tires were made for the first 6 months of 1920, and therefore, you will see 80% of the total estimates for the whole of 1920 were made in the first 6 months:

Company	Per Day	Total
Goodyear	25,000	3,750,000
Goodrich	20,000	3,000,000
Firestone	15,000	2,250,000
United States	20,000	3,000,000
Fisk	15,000	2,250,000
Miller	7,500	1,125,000
Ajax and Racine	10,000	1,500,00
		16,875,000
All others	30,000	3,750,000
Grand total		20,625,000

"These figures of production have been compiled by myself without making a careful survey and are only rough estimates. I feel, however, that they are close enough for the purpose intended and will readily show that there has been a great over-production.

"I further feel that the estimate of the total requirements of 22,500,000 is based upon normal weather conditions where machines are used to the full extent. On account of the bad weather and a late spring machines have not been used as much as ordinarily.

"So far as the low-priced tire manufacturers not being affected, wish to advise that within the past 30 days (previous to August 21) we have been compelled to reduce production about 75%. We had felt that our business would not be affected as much as the high-priced tire business but we have been mistaken in this prediction. We have reduced our production very low.

"I do not believe that the 'gyp' tire dealers have anything to do with the present situation. There are certain people who will not buy high-priced tires and continually flounder around for one cheap tire after another. Again there are people who will absolutely not buy a cheap tire but insist on having a high-grade, standard-make tire. Likewise, there are certain people who buy a Ford because it is cheap where other people would buy a medium priced or a high priced car because as a whole it is much more satisfactory."

We would be glad to hear from any of the tire manufacturers as to whether in their opinion the above estimates are too high.

Another Opinion on Tire Production

October 6, 1920

To Members:

Another of our regular members writes us in regard to the estimates of tire production given by the tire manufacturer who wrote the letter contained in our Bulletin 57 of September 24 last. It will be recalled that he used an average of 150 production-days in six months as the basis of his calculations. The present writer takes issue with this average. His letter follows:

"The writer's estimate is in serious conflict with the one which you submit. In the first place, I believe that the aggregate production is approximately 20,000 tires per day and the number of days in six months 125 instead of 150, which would give nearer fifteen million tires per six months' production than twenty; and, further, that the consumption of tires is not reduced materially as is shown in your bulletin for the reason that much of the increased mileage per unit is due to the improved condition of the roads as well as the improved manufacture of the product. Improved condition of roads increases mileage per day as well as increasing mileage per tire.

"With these modifications, the writer reaches the conclusion that the observation of the reduced production now going on will, before the end of the present year, so far absorb the over-production or the under-consumption that a normal production and consumption of approximately 30,000,000 tires per annum will enable the business to reach its normal condition again.

"If, on the other hand, as a matter of course the wild error of expansion is continued, whether by the adding of additional small companies or by the enlarging of facilities on the part or the established companies, we can also expect a continuation or repetition of the present unusual conditions in this industry.

"This is not written for the purpose of exploiting the writer's opinions, but in the interest of stabilizing the thought and opinion regarding the possibilities of the tire industry for the future."

Mid-West Association Meets

The September meeting of the Mid-West Rubber Manufacturers' Association was held at the Chicago Athletic Association September 14, and attended by forty-two members. From the standpoint of discussion it was one of the most interesting meetings hitherto held by the Association. The feeling expressed by most of the tire manufacturers was that the worst had already been experienced in the depression in the tire business, that conditions had already improved somewhat and that they would gradually improve until the first of the coming year when normal business was again looked for.

President Christie called for expressions of opinion from tire manufacturers representing all parts of the country, and all of them in general agreed with this view. The opinion was also expressed that real salesmanship was again to play a part in the tire busines and that hard work would be the solution of selling problems.

The opinion was also expressed that tire prices were soon due for a radical revision downward, although there was considerable difference of opinion on this point, as some manufacturers felt that the manufacturing trade at large would not reduce prices on account of their raw material having been purchased at such high price levels.

U. S. Rubber Earnings

The earnings of the United States Rubber Company for the first six months of the current year, as disclosed in the company's application to have listed on the Stock Exchange $20,000,000 of its ten-year 7½ per cent secured gold notes, were equal to 13.68 per cent for the period, or at the rate of 27.36 per cent per annum, on the $81,000,000 of common stock, after charges, including dividends on the preferred stock and dividends on minority stock holdings of subsidiary companies.

Total sales for the six months amounted to $129,588,986, while net income before interest, but after making provision for depreciation of plants and for Federal, Canadian and British taxes, totaled $15,596,831. Interest charges, net, were $1,905,907, thereby reducing net income to $13,690,924. From this was deducted $2,609,359 for the several dividend charges, which precede the common stock's participation in the company's earnings, leaving $11,081,565 available for the common stock. Dividends paid during the half year, included provision for the dividend which was payable on July 31, took $3,240,000 of this so that $7,841,565 was returned to surplus account.

Tire Exports for 1920

Of the $36,000,000 worth of tires exported from the United States in the eleven months ending with May, 1920, $2,333,333 worth went to France, $2,500,000 worth went to Great Britain, $2,000,000 worth went to Cuba and about $4,000,000 went to South America.

Condition of Cotton Crop

The Crop Reporting Board of the Bureau of Crop Estimates of the United States Department of Agriculture estimates from the reports of the correspondents and agents of the bureau that the condition of the cotton crop on September 25 was 59.1 per cent of a normal, as compared with 67.5 on August 25, 1920, 54.4 on September 25, 1918, and 63.0 the average on September 25 of the past ten years.

A condition of 59.1 per cent on September 25 forecasts a total production of about 12,123,000 bales. That is, the final outturn will probably be larger or smaller than this amount, according as conditions hereafter are better or worse than average conditions. Last year the production was 11,329,755 bales, two years ago 12,040,532 bales, three years ago 11,302,375, four years ago 11,449,930, and five years ago 11,191,820 bales.

Comparison of conditions by States follows:

	Sept. 25			Aug. 25		Chge during Sept.	
State	1920.	1919.	10-yr. avg.	1920.	10-yr. avg.	1920.	10-yr. avg.
Virginia ..	72	64	77	81	83	— 9	—6
N. Carolina	68	61	70	79	74	—11	—4
S. Carolina	62	61	66	71	71	— 9	—5
Georgia ...	51	49	66	58	70	— 7	—4
Florida ...	50	35	62	57	69	— 7	—7
Alabama ..	49	45	61	58	67	—10	—6
Mississippi.	50	52	60	60	68	—10	—8
Louisiana..	47	38	59	55	64	— 8	—5
Texas	61	52	61	67	65	— 6	—4
Arkansas .	65	60	64	75	72	—10	—8
Tennessee..	66	64	68	75	77	— 9	—9
Missouri ..	75	78	72	83	77	— 8	—5
Oklahoma .	70	72	61	84	67	—14	—6
California .	78	95	93	80	95	— 2	—2
Arizona ..	90	92	..	86	..	+ 4	..
Others	90	95	..	90	..	..	..
U.States	59.1	54.4	63.0	67.5	68.2	—8.4	—5.2

For purposes of comparison, the condition of the cotton crop in the United States monthly and the estimated yield per acre for a series of years are given below:

Years:	May 25.	June 25.	July 25.	Aug. 25.	Sept. 25.
1920...	62.4	70.7	74.1	67.5	59.1
1919...	75.6	70.0	67.1	61.4	54.4
1918...	82.3	85.8	73.6	55.7	54.4
1917...	69.5	70.3	70.3	67.8	60.4
1916...	77.5	81.1	72.3	61.2	56.3
1915...	80.0	80.2	75.4	69.2	60.8
1914...	74.3	79.6	76.4	78.0	73.5
1913...	79.1	81.8	79.6	68.2	64.1
1912...	78.9	80.4	76.5	74.8	69.6
1911...	87.8	88.2	89.1	73.2	71.1
1910...	82.0	80.7	75.5	72.1	65.9
1909...	81.1	74.6	71.9	63.7	58.5
1908...	79.7	81.2	83.0	76.1	69.7
1907...	79.5	72.0	75.0	72.7	67.7

The estimated cotton crop for 1920 compares with other years as follows, with the Government's December estimate in other years, the final Census Bureau's estimate and the final commercial estimate in previous years (figures represent bales of 500 pounds, and first two columns exeluding linters, the others including them):

	Agl. Dept. Dec. est.	Census.	Comm'l.
1920...	*12,123,000	.....	.....
1919...	11,030,000	11,329,755	12,443,180
1918...	11,700,000	12,040,532	11,360,000
1917...	10,949,000	11,302,375	11,865,000
1916...	11,511,000	11,449,930	12,738,000
1915...	11,161,000	11,191,820	12,862,000
1914...	15,966,000	16,134,930	15,196,000
1913...	13,677,000	14,156,486	14,552,000
1912...	13,820,000	13,703,421	14,104,000
1911...	14,885,000	15,692,791	16,101,000
1910...	11,426,000	11,608,616	12,075,000
1909...	10,088,000	10,004,919	10,513,000
1908...	12,920,000	13,241,799	13,817,000
1907...	11,678,000	11,107,179	11,441,000
1906...	12,546,000	13,273,809	13,540,000
1905...	10,168,000	10,575,017	11,234,000
1904...	12,162,000	13,438,012	13,654,000
1903...	9,962,000	9,851,129	10,011,379
1902...	10,400,000	10,784,473	10,725,422
1901...	9,674,000	9,748,646	10,662,995
1900...	10,100,000	10,245,602	10,401,453
1899...	8,900,000	9,507,786	9,142,838

*This month's estimate.

The area of cotton planted in 1920 and preceding years has been as follows:

	Acres.		Acres.
1920.....	35,504,000	1915.....	32,107,000
1919.....	35,133,000	1914.....	37,406,000
1918.....	37,073,000	1913.....	37,458,000
1917.....	34,925,000	1912.....	34,766,000
1916.....	36,052,000	1911.....	36,681,000

Wildman Rubber to Build

Announcement has been made by the Wildman Rubber Company that work will be begun on the firm's contemplated $1,000,000 plant at Bay City, Mich., within the next few weeks.

"We hope to have the foundations for our manufacturing plant and power building completed this fall," said J. C. McCabe, secretary of the Wildman Rubber company, recently. 'The first unit of the manufacturing plant will be a building three stories high, with a basement, will be 160 feet wide and 365 feet long and will be constructed of reinforced concrete. Expansion will be provided by the construction of wings running south from the main building. The power plant, which is to be erected between the main building and the river, will be 80 by 110 feet; three side tracks will be run between the power plant and the main building, while an elaborate set of tracks and loading docks will also be provided."

United States Promotes Needham

T. J. Needham, for the past two years manager of the Omaha branch of the United States Rubber Company, has been appointed manager of branch store sales with headquarters in New York City.

Mr. Needham joined the Omaha organization in January, 1919, as manager, and since that time this branch has become the largest branch of the company. Mr. Needham's new duties will give him jurisdiction over the forty-seven branch stores.

John J. Meacham, formerly manager of the St. Louis branch, succeeds him.

Business Improves

Business conditions in Akron, Ohio, rubber center of America, have recovered from the transitory slump of a few weeks ago, and now show greater stability than for several months, as indicated by sales figures of some of Akron's big rubber concerns. There is no better indication of the stability and healthy condition of the rubber tire industry, assert Akron's manufacturing leaders, than the manner in which business is steadily increasing despite the business depression throughout the country.

Allen Branch Office Moves

Announcement has been made by the Allen Machine Company, of Erie, Pa., to the effect that the firm's New York offices have removed from 17 West 42nd Street to 5 Columbus Circle. Telephone —Columbus 9363.

Price Guarantee Advocated

The manufacturer's guarantee against price decline was characterized as a good form of "insurance" by representatives of business interests who appeared on October 6 at the Federal Trade Commission hearing in Washington, D. C. They urged the commission to follow a "hands-off" policy and decided complaints against the systems on the merits of individual cases.

Proponents of the guarantee practice denied that it aided in maintaining high prices. On the contrary, they declared it had resulted in an immediate passing on of price reductions by manufacturers to consumers. As the manufacturer assumed the risk of losses, the dealer was forced, through competition, to sell at his lowest figure, the speaker argued.

The rubber industry was declared by M. E. Clark as being unable to operate effectively without the guarantee. He said that fifty-five out of sixty-nine of the principal tire and rubber manufacturing concerns employed it because of the seasonal demand for their products. Dealers would not accept the risk, he said, unless they had assurance that prices would remain at or above the level at which the purchase was made.

He asserted that practically all manufacturers of motor tires had been compelled to make refunds to their dealers, under the guarantee contracts when the slump in the market came last year. As a result of the guarantee, Mr. Clark believed, the consumer had obtained the benefits of lower prices much sooner than if the dealers had been loaded up with high priced stocks on which they must carry the loss alone.

Speakers opposing the practice told the commission that there was no way to avoid the menace of overstocking by dealers who were certain of sustaining no loss under the guarantee.

Mr. Clark's statements were challenged by other speakers who maintained that had not the guarantee been in effect dealers would not have overloaded.

Chairman Murdock, in closing the hearing, extended an invitation to all persons attending the conference to present additional information to the commission in the form of briefs. The commission may issue a general statement of its opinion or may apply the information obtained at the hearings to the cases involving the question now pending for decision.

Kelly Springfield Stock Issue

The Kelly Springfield Tire Company is preparing to issue 82,000 shares of additional common stock. This is to be offered to stockholders of record October 15 at $50 a share. Half of the purchase price is payable November 10 and the balance December 10. The present shareholders will have the right to subscribe to the new stock to the extent of 35 per cent. of their holdings. The issue has been underwritten by H. P. Goldschmidt & Co., Goldman, Sachs & Co., and Lehman Bros.

MARKETS

Manufactured Rubber Goods

NEW YORK, OCT. 5, 1920

No general improvement in the market for manufactured rubber goods is to be noted, and while members of the industry are optimistic as to the outlook, it is still held in many quarters that prospects are far from bright.

Price maintenance is the question of the hour in this industry as in many others. Slashing of prices has been going on during the past three or four weeks in many lines, commodities of all descriptions being involved in the slump. "Before the war prices" has apparently become the slogan of the day in some quarters.

For a manufacturer who has been operating on a very conservative scale during the past several months, some reductions are feasible. Downward revisions in raw materials prices during the past three months have undoubtedly been general in many lines, although not large enough to permit of any recession to pre-war price levels. The manufacturer who has bought to cover his needs from month to month has been in a position to give his buyers the benefit of a reduced price. But for manufacturers in a large industry such as the rubber business, where it is necessary to have veritable hoards of numerous raw materials on hand in order to insure the steady operation of the big plants, the hand to mouth buying policy is an impossibility, made unusually so by the uncertain conditions on the railroads for the past several months.

AUTOMOBILE TIRES

Consumers in general are watching for a "big break" in automobile tire prices. Whether or not their expectations will be realized remains to be seen, but present indications do not point to any sweeping reductions in prospect. Two companies have announced reductions ranging from fifteen to twenty per cent in the prices of all their tires. One of the companies in question is credited with having worked on a very cautious policy for some months past, and accordingly has been able to take full advantage of all of the recent big breaks in the markets for crude rubber, fabrics, cotton, compounding materials, etc.

Leading tire manufacturers, who now have their warehouses filled to overflowing with manufactured tires, and high-cost raw materials destined for use in the manufacture of other tires, cannot see their way clear to follow the lead of the company mentioned. Any marked price slashing on tires already made from high-cost materials must result in a loss to the makers, and the latter are determined to hold out as long as possible before taking such losses.

This firmness does not apply to the smaller tire makers, however. The latter, less properly financed than their bigger colleagues, have been hard pressed to meet current obligations, and have been obliged to get rid of their factory output at the best prices they could get, in order to keep going. The smaller cut-price tire dealers have been having a perfect orgy of bargain sales with tires from such manufacturers.

Recent reductions in prices on several popular makes of automobiles are taken as a good omen for the tire industry. The reductions in the Ford cars particularly are welcomed, as more of these automobiles are sold than of any one make, and small-size tire business is as good as any other business to the tire manufacturers.

BOOTS AND SHOES

Manufacturers are doing a fair business in rubbers for the fall and winter trade, but early sales are not as heavy as normally, due mainly to the hand-to-mouth buying policy on the part of the retailers. Makers of rubbers, rubber boots, and arctics, do not expect to find the sledding as hard this season as last, as the Government is believed to have disposed of its heavy surplus stocks of these materials. Competitive selling of the Army and Navy stock last season put a big dent in the business of the regular trade in these lines.

The coming of fall weather has brought out an active demand for rubber heels and manufacturers are doing a big business. Composition soles are also going well. Manufacturers are already outlining their selling campaigns for next spring's business in rubber soles and heeled sports and work shoes, and expect a big season.

MECHANICAL GOODS

Routine demand for rubber belting is reported, and the general slackness in the industrial world is having its effect upon the belting market. Export buying is not heavy at the present time, the unfavorable rates of exchange serving as an effective bar to the large volume of trading that would otherwise be coming in. Buying of airbrake hose and couplings for the railroads is reported as quiet. Manufacturers generally are not planning yet on their lines of hose for next spring. Demand for marine specialities is not active at the moment and a slow market for packing is reported.

MISCELLANEOUS

Makers of druggists' sundries are doing an active business with the arrival of fall weather and retailers are stocking up for the early winter trade. There is a steady export business in sundries and surgical appliances, this business being only partially effected by the low rates of exchange.

With home canning running right into the fall, a steady market demand for rubber jar rings has kept dealers busy. Rubber toy makers are now getting under way on their run of goods for the Christmas trade. Advertising novelty manufacturers report an active demand for toy balloons and other rubber novelties. The great increase in the building program in many parts of the country is making for an active market for plumbing specialties.

Cottons, Yarns and Fabrics

NEW YORK, OCT. 5, 1920

The final cotton crop of the 1920-21 season will total 12,123,000 bales, according to the Department of Agriculture's estimate, issued yesterday, placing the condition of the crop as of September 25 at 59.1 per cent, against 67.5 per cent on August 25.

Conditions in the market for raw cotton have been very unfavorable for some time past, and prices having been dropping steadily from day to day. There has been little speculative support of the market, condition in the money market being too tight to permit of much outside interest at this time. Support from the mills has also been lacking, the continued depression in the markets for finished cotton goods lending a dull appearance to this branch of the market. This non-buying policy on the part of the mills is having a discouraging effect upon the part of holders, and some force sales have been reported as having been put through at prices considerably under those ruling in the open market.

Southern growers are making all kinds of threats in an effort to buoy the market, but it is not believed that opposition from any quarter can stay the downward march of the market to more reasonable levels. Some of the larger interests in the South are threatening to hold the larger part of their new crop until the market goes more their way, but it takes money to hold cotton, and it is not believed that the Federal Reserve System will allow its member banks to extend

such credit to the cotton men, as it has been consistently maintained by the Board that no encouragement to the holding of merchandise for higher prices should be extended.

Prices are steadily declining. At the close yesterday, October cotton closed at 22.25 to 22.50 cents per pound, with November held at 21.75, December 21.23, January 20.98, February 20.80, March 20.70, April 20.65, May 20.55, June 20.40, July 20.25 and August 19.95, this being the first break below the twenty cent level for many months past.

EGYPTIAN COTTON

Domestic spinners will not be such heavy buyers of Egyptian cotton this year according to reports from New England mill centers, which state that the spinners of tire fabrics are working out a good grade of fabric from domestic cotton of about one inch staple. The new cotton fabric is said to be fully as good as that made from the Egyptian long staple. Reports from Alexandria indicate that the new crop is progressing favorably, and a yield of about 750,000,000 pounds for the season is forecast. Handlers of the staple are said to be searching Europe for an outlet for the cotton, expecting a marked slump in American buying.

SEA ISLAND COTTON

Few spinners are paying attention to the stagnant Sea Island industry, and plans of the Department of Agriculture for the establishment of a new long staple cotton to take the place of the Sea Island are not being pushed by the growers, many of whom have turned to the cultivation of other products. No open market for the Sea Island cotton is reported, owing to the absence of any important offerings.

AMERICAN-EGYPTIAN COTTON

Growers in the Salt River Valley and other sections of the Southwest have been somewhat disconcerted at the sudden reaction in the market for cotton, and many are reported to be unwilling to sell at present bid prices. The holders, however, are expected to put their stocks on the market when they realize the general condition of the business at this time. A good crop is looked for during the season of 1920-21, and spinners of tire yarns are reported to have contracted for a good portion of the probable output.

TIRE FABRICS

Tire amnufacturers are not in the maket for any additional supplies of tire fabrics, and the larger companies are said to be well stocked with fabric enough to take care of their early needs once they get business going again on a near-normal basis. Little of the fabric is being produced at the present time, spinners holding to their determination against overloading the market and bringing about further weakness. Prices are nominally held for all varieties.

DRILLS, SHEETINGS AND OSNABURGS

Quotations on all varieties of cotton goods are still heading downward, in sympathy with the weak trend of the market for the raw stock. Mills have reduced their prices on drills and sheetings, but speculative and other second hand interests are still underselling the producers to some extent. There is a very easy undertone ruling, and prices are nominal, varying with different sellers.

TIRE FABRICS

17¼-ounce Sea Island, combed, sq. yd.	Nominal		
17¼-ounce Egyptian, combed	—	@	—
17¼-ounce Egyptian, carded	—	@	—
17¼-ounce Peelers, carded	—	@	—
17¼-ounce Peelers, combed	—	@	—

DUCKS

Belting (pound basis) lb.	.65	@	—
Hose (pound basis)	.65	@	—
*Enameling	.65	@	.70
Shoe Ducks	.72	@	—
Single filling yd.	.28	@	—
Double filling	.32	@	.36

*Price varies according to width.

DRILLS

37-inch 3.25-yard yd.	.15	@	.16
37-inch 2.75-yard	.18	@	—
37-inch 3.00-yard	.16½	@	—
37-inch 3.50-yard	.15	@	—
37-inch 3.95-yard	.12½	@	—
37-inch 2.00-yard Southern	Nominal		
37-inch 2.00-yard Northern	Nominal		
40-inch 2.40-yard Southern	Nominal		
40-inch 2.40-yard Northern	Nominal		
52-inch 1.90-yard Southern	Nominal		
52-inch 1.90-yard Northern	Nominal		

SHEETINGS

40-inch 2.35-yard yd.	Nominal		
40-inch 2.50-yard	.21	@	—
40-inch 2.85-yard	.16½	@	.17
40-inch 3.15-yard	.21	@	—
40-inch 3.60-yard	.16	@	—
40-inch 3.75-yard	.15	@	—
40-inch 4.25-yard	.13	@	—

Note—In view of the unsettled conditions prevailing in the market at the present time, the prices quoted above are more or less nominal, and are not guaranteed.

BURLAPS
(Carload Lots)

	Cents	Per	Yard
7 -ounce 40-inch	——	@	——
7½-ounce 40-inch	7.50	@	——
7½-ounce 45-inch	8.00	@	——
8 -ounce 40-inch	8.20	@	——
8½-ounce 40-inch	8.40	@	8.50
10 -ounce 36-inch	10.00	@	——
10 -ounce 40-inch	10.15	@	——
10 -ounce 45-inch	Nominal		
10½-ounce 40-inch	10.50	@	——

* And higher, according to width.

offering to the producers. The latter, however, have their production for the remainder of 1920 well taken care of, and are not disposed to book any additional business. Prices are unchanged.

LITHOPONE

A slight increase in demand for lithopone was noticeable with the shading of prices one-half cent per pound, but demand is not so strong as a few months past, when consumers were besieging producers with requests for goods. Producers are still booked up for the remainder of the current year and are not taking on additional business. More lithopone is appearing on the re-sale market.

WHITING

Routine inquiry for this product is reported, and the market is nominally unchanged on the quoted basis. Buying for account of the rubber manufacturing trade is very light in comparison with the inquiry earlier in the season, and little outlet for the product is seen in this direction. Manufacturers are finding it easier to obtain stocks of imported chalk and are taking care of their business in a fairly satisfactory way.

BARYTES

Freight rate increases have added somewhat to the cost of barytes delivered to the consumer, but producers are holding the prices unchanged on the basis of $23.50 to $25.00 per ton, f.o.b. Southern mills. Little is offering for prompt shipment, however, as most of the producers have on hand all the business they can conveniently take care of. Imports have not shown any appreciable increase, owing to the low prices at which domestic producers are selling.

DRY COLORS

Blacks have not yet felt the effect of the non-buying attitude of the tire trade, paint manufacturers taking all of the spot stocks offering, the market holding steady and unchanged. A quiet demand for yellows is reported, but the market is in strong hands. Blues are meeting with a moderate inquiry, and are held steady. Browns are also firm. Imports are picking up, but many of the consignments arriving in the local port have been contracted for by consumers, and are being shipped right out, little offering on the open market. In the latter cases, however, it has been found that consumers prefer the domestic goods, even though the foreign may be sold at a little under the market.

ZINC OXIDE

The market has eased off somewhat, ten per cent lead sulphate being offered at 8¾ to 9¼ cents per pound, while the twenty per cent is offering at 8½ to 9 cents per pound. Rubber manufacturers have been reselling zinc oxide in the open market, and the influx of these supplies, taken together with the falling off in demand from the rubber trade, has had a weakening tendency on the market. Producers generally are holding firm and have business enough to take care of all current production.

CRUDES

A steady inquiry for benzol is reported, and the market is strongly held at 33 to

Chemicals and Compounding Materials

NEW YORK, OCT. 5, 1920

Dealers report that buying of chemicals and compounding materials for the tire industry has shown a very sharp falling off and this slackening in consumption has been a contributing factor to the recent declines in prices which have been effected. Some goods already sold are beginning to find their way back on the market, and this reselling is having a still further depressing effect.

The market has been in an irregular condition during the past two weeks, but it is noticeable that the bulk of the price changes made by leading market interests are downward. Weakness is spreading to many sections of the trade where firmness has been the order of the day for months past. Only the materials for which raw supplies are lacking are showing unusual strength at this time, and most of these materials are largely used in the paint trade, which is fairly active for this season.

LITHARGE

A quiet market for litharge is reported. Demand is not particularly keen at the present time, although business is still

38½ cents per gallon for the ninety per cent, and 35 to 40½ cents per gallon for the pure. Demand exceeds available supplies, export buyers being particularly active in the market. Solvent naptha is showing strength, being held at 30 to 35½ cents per gallon, under a heavy demand. A strong market for toluol is noted, with pure in drums offering at 35 to 40½ cents per gallon and commercial held at 30 to 32 cents. Xylol holds steady and nominally unchanged.

INTERMEDIATES

An easier market for aniline oil has developed, the market being quoted at a range of 27 to 30 cents per pound. Betanapthol is meeting with a quiet demand and the market is in a nominal position. Benzidine holds quiet and unchanged. Increased firmness in Paranitraniline is reported, the market being firmer at $1.20 to $1.25 per pound. Paraphenylenediamine at $2.70 to $2.85 remains steady.

Current Prices for Chemicals, Fillers, Colors, etc.

Acetone, carlots	lb.	.21 @	.22
smaller lots	lb.	.22 @	.23
Acetanilid, C P., bbls.	lb.	.50 @	.51
Acids, Acetic, 56 per ct.	cwt.	8.40 @	9.15
Carbolic, C. P.	lb.	.12 @	.20
Muriatic, 20 deg.	cwt.	2.25 @	2.75
Muriatic, 22 deg.	cwt.	3.00 @	3.25
Nitric, 42 deg.	cwt.	8.00 @	8.25
Nitric, 40 deg. cwt.		725 @	7.75
Sulphuric, 60 deg. car lots	tons	18.00 @	—
Sulphuric, 60 deg. car boys		22.00 @	—
Tartaric, crystals	lb.	.71 @	—
Aluminum Silicate		Nominal	
Aniline oil, bulk basis Contract		— @	—
Imported		Nominal	
Domestic		.27 @	.30
Antimony—			
Oxide	lb.	.14 @	.15
Sulphuret, red	lb.	.22 @	.25
Sulphuret, golden	lb.	.28 @	.30
Sulphuret, crimson	lb.	.45 @	.50
Alcohol, denatured, 190 proof		1.00 @	1.04
Wood, 95 per cent.		3.25 @	3.30
Ethyl, 190 proof		5.45 @	5.70
Aldehyde Ammonia		Nominal	
Ammonia, powdered		.17 @	.17½
Ammonium Carbonate, domestic	lb.	.16 @	.16½
Amyl Acetate	gal.	4.10 @	4.15
Anthracene, 80 per cent.		1.00 @	1.10
Anthroquinine, 95 per ct.		2.25 @	3.75
Asbestine		Nominal	
Asphaltum, Egyptian	lb.	.20 @	.25
Domestic	ton	.30 @	.40
Barium, dust		— @	—
Sulphide	lb.	— @	—
Barytes, prime white imported	ton	Nominal	
white, domestic	ton	35.00 @	40.00
off-color, domestic	lb.	20.00 @	30.00
Southern, f. o. b. mills		23.50 @	25.00
Western, f. o. b. mills		23.50 @	26.00
Beeswax		.23 @	.58
Benzidine Base	lb.	1.25 @	1.30
Benzol, 90 per ct.		.33 @	.38½
Benzol, pure bulk, 100		.35 @	.40½
Blanc Fixe, dry, bbls.	lb.	.06 @	.06½
Burgundy Pitch, dom.	lb.	.08 @	.10
Foreign		.60 @	.65
Blacks, Drop	lb.	.05½ @	.15
Ivory	lb.	.16 @	.30
Carbon, gas, cases	lb.	.12 @	.30
Lampblack, R M.	lb.	.12 @	.40
Mineral blacks	ton	35.00 @	45.00
Blues, Prussian		.95 @	1.00
Soluble	lb.	1.00 @	1.05
Ultramarine	lb.	.15 @	.50
Browns, Umber, Turkey, burnt powdered	lb.	.05½ @	.07
American, burnt	lb.	.04½ @	.06
Cadmium, sulphide, yellow	lb.	1.75 @	2.00
Carbon, Disulphide, bulk	lb.	— @	—
Bisulphide	lb.	.08½ @	.09
Casein, C. P.	lb.	.35 @	.36
Castor Oil		.16 @	.18½
Caustic Soda, 76 per ct.	cwt.	4.00 @	4.35
Chalk, precipated, extra light	lb.	.05½ @	.06
heavy	lb.	.04½ @	.05
China clay, domestic	ton	10.00 @	20.00
imported	ton	19.00 @	25.00
China Wood Oil, bbls.	lb.	.18 @	—
F.o.b. Pacific Coast		.16 @	—
Chloroform, U. S. P.		.43 @	.45
Coal Tar Pitch		— @	—
Cottonseed Oil, crude f.o.b. mills	lb.	10.25 @	—
Prime summer yellow	bbls.	13.00 @	13.50
Dimethylaniline	lb.	.92 @	.97
Elateron		— @	—
Formaldehyde, spot	lb.	.44 @	.50
Fullers Earth, powd., carload lots		17.00 @	—
Fossil flour	lb.	.03¾ @	.05
Genasco Mineral Rubber		— @	—
Gilsonite	ton	55.00 @	65.00
Glue, extra white	lb.	.35 @	.45
medium	lb.	.30 @	.35
low grade		.22 @	.26
foot stock		.19 @	.22
brown foots		.19 @	.22
common bone		.18 @	.21
Glycerine, C. P. (drums)	lb.	.28 @	.28½
cans		.30½ @	.31
Graphite, flake (bbl.)	lb.	.14 @	.20
powdered (bbl.)	lb.	.05 @	.10
Green, chrome, R. M.	lb.	.42 @	.70
Ground glass (fine)	lb.	.03½ @	.04
Hexamethylene	lb.	1.95 @	—
Infusorial earth, powd'd.	lb.	.02 @	.035
bolted	lb.	.035 @	—
Iron oxide, red, reduced grades	lb.	.13 @	.15
red, pure, bright	lb.	— @	—
Hexamethyenetetramine	lb.	2.25 @	2.50
Kaolin		— @	—
Lime, hydrated		— @	—
Lead, red, dry (casks)	lb.	.12¼ @	.12½
sublimed	lb.	— @	—
white, basic carb.	lb.	.10½ @	.11
white, basic sulp.	lb.	.10 @	.10¼
Lime flour	lb.	— @	—
Litharge (casks)	lb.	.11¾ @	.12¼
English	lb.	— @	—
Lithopone, domestic, bbls.	lbs.	.08½ @	.08¾
in bags	lb.	.08¼ @	—
M. R. X.		— @	—
Magnesia, carbonate	lb.	.18 @	.19
calcined light	lb.	.60 @	.65
Magnesite, calcined, pwd.	ton	50.00 @	65.00
Magnesia, Oxide, heavy		— @	—
Light		— @	—
Extra light		— @	—
Napthalene	lb.	.12½ @	.15
Nirobenzol		.15 @	.16½
Naphtha, motor gasoline, (steel bbls.)	gal.	.31 @	—
68 @ 70 degress (steel bbls.)	gal.	.38 @	—
70 @ 72 degrees (steel bbls.)	gal.	.39 @	—
73 @ 76 degrees (steel bbls.)	gal.	.41 @	—
machine (steel bbls.)	gal.	.50 @	—
Oil corn, crude factory	cwt.	11.76 @	—
corn, ref. (bbls.)	cwt.	16.26 @	—
linseed, (bbls.)		1.22 @	—
In carloads, spot		1.24 @	—
tank cars		1.16 @	—
Oil palm, Lagos	lb.	.11 @	—
Niger		.10¼ @	—
pine, yellow	gal.	1.00 @	—
distilled	gal.	1.25 @	1.35
rapseed, refined	gal.	1.30 @	1.45
rapseed, blown	gal.	1.60 @	—
rosin, first rectified	gal.	.74 @	—
second run		.77 @	—
tar (commercial)	gal.	.38 @	.40
Oleum Acid, 20 per ct.	ton	28.00 @	30.00
Orange mineral, Amer.	lb.	.15½ @	.16½
imported	lb.	Nominal	
Ozokerite		Nominal	
Paraphenylenediamine	lb.	2.60 @	2.70
Petrolatum, bbls., amber	lb.	.08 @	—
pale yellow	lb.	.07½ @	.08½
Paranitrosodimethylanaline		— @	—
Parafin, refined, 118 @ 120 m. p.		.10¾ @	.11
127 @ 129 m. p.		.09¾ @	.10¼
137 @ 140 m. p.		.11 @	.11½
Phenol		.12 @	.16½
Pumis		.05 @	.10
Pine tar kiln	bbl.	15.00 @	—
Pitch	bbl.	12.00 @	—
Plaster of pais	bbl.	4.25 @	5.00
Red Tuscan	lb.	.22 @	.35
red (American)	lb.	.12 @	.16
Indian (English)		.14 @	.18
Standard	lb.	— @	—
Rosin (common to good)— 280 lbs.		13.25 @	—
Rotten stone, powdered	lb.	.02½ @	.04½
Rubber, substitute, black	lb.	.13 @	.17
white	lb.	.15 @	.24
brown	lb.	.20 @	.25
Rosin Oil, first rectified		.70 @	.73
Second rectified		.73 @	—
Third rectified		.89 @	—
Fourth rectified		.95 @	—
Soda ash, light 58 pct.	cwt.	2.65 @	2.85
Sodium Nitrite 96@98 pct.		.16 @	.17½
Solvent Noptha, crude, hvy.		.30 @	.35½
Soya Bean Oil, bbls.	lb.	.14 @	—
Sellers, tanks, f. o. b. Coast		.10½ @	.11¼
Stearic Acid, single		.19 @	—
Shellac, fine orange	lb.	Nominal	
Sulphur Chloride, drums		.06½ @	.16
Shellac T. N.	lb.	.92 @	.95
Bleached, ordinary	lb.	.85 @	.95
Bleached, bonedry	lb.	1.05 @	1.10
Silex (silicia)	ton	25.00 @	40.00
Soapstone, powdered	ton	15.00 @	20.00
Starch, corn, powd.	cwt.	4.23 @	4.81
pearl		4.08 @	4.66
Jap potato, duty pd,	lb.	.06¾ @	—
Sulphur, crude	ton	— @	—
100 pounds		— @	—
roll		3.45 @	—
commercial superfine		2.10 @	2.35
Talc, American	ton	18.00 @	20.00
French	ton	30.00 @	—
Thiocarbanilid		— @	—
Toluol, pure, in drums	gal.	.35 @	.40½
commercial		.30 @	.32
Tripolite earth	lb.	.01½ @	—
Turpentine, pure gum— spirit	gal.	1.39 @	—
wood	gal.	1.35 @	—
Venice, artificial	gal.	.15 @	.16
true		3.25 @	3.30
Vermilion, English	lb.	1.55 @	1.60
American		.25 @	.30
Vorite		Nominal	
Wax, beeswax, crude yel.	lb.	.24 @	.26
refined		.31½ @	.32
Bayberry		.37 @	.39
ceresin, white	lb.	.15 @	.16
yellow		.14 @	.15
Whiting, commercial	cwt.	1.40 @	—
Gilders Bolted		1.45 @	—
Paris white, Amer.	cwt.	1.75 @	—
English cliffstone	cwt.	2.00 @	—
Xylol (gal.) pure		.45 @	.50½
Commercial		.30 @	.35½
Zinc Oxide, French process, red seal		.11½ @	.11¾
green seal		.12½ @	.12¾
white seal		.13½ @	.13¾
Leaded Grades— Commercial, lead free		.09½ @	.10
5 per ct. lead sulphate		.09 @	.09½
10 per ct. lead sulphate		.08¾ @	.09¼
20 per ct. lead sulphate		.08½ @	.09
35 per ct. lead sulphate		.08¼ @	.09⅛
Zinc Sulphate		.03½ @	.04½

Crude Rubber

NEW YORK, OCT. 5, 1920

Continued downward revision of crude rubber prices has been in evidence during the past two weeks, and fractional declines have been reported daily. September closed very dull, with practically no buying interest in the market, and with heavy accumulations of goods offering for sale for prompt shipment.

With the new month, however, conditions have shown a little improvement. Rubber tire and other manufacturers who have been having their forward shipments of crude stock delayed, being unable to accept any more shipments at their already-overstocked factories, are now beginning to let a little of this accumulated stock come forward, and the pressure of stocks in the New York market is being somewhat relieved by this. This change of front on the part of the tire manufacturers is by no means general as yet but importers are hoping that the manufacturers will see their way clear to take larger shipments from now on.

The low prices which have been established in the recent breaks in the crude rubber market have also tempted some rubber goods manufacturers into the market for future shipment stock. Inquiries since the first of the month have been much more numerous than for some months past, and contracting for forward delivery stock is being done in a small way. The largest buyers in the crude market thus far in the month have been

manufacturers of druggists' sundries. Tire makers have been in the market but on a smaller scale.

While the improvement has not been general enough to meet all of the ideas of the importers, it is conceded throughout the trade that the outlook is much more favorable than it has been for some time. Some of these interests believe that the dull period in the rubber tire market has passed, and point to the numerous reductions in prices of automobiles as evidence of the fact that the public is still hungry for autos, and, of course, tires. Some of the tire manufacturers are reported to be making inquiries now for crude stock to take care of all of their 1921 requirements, but the placing of the actual orders this far in advance has not yet begun.

Prices have now reached their low level for the present movement, in the opinion of some of the more optimistic members of the trade. Opinions as to the probable trend of the market once buying is again resumed appear to vary considerably. Some profess to believe that the market will immediately shoot up and pass the levels ruling before the smash came early during the present season. Others state that, while in their opinion, prices will undoubtedly rise when the buying is again resumed, prices will not go to the high levels prevailing early this year, as porduction of crude rubber at this time is in excess of the regular demands of the trade, and unless some new outlet for the product is discovered, there will be plenty of crude rubber to be had at reasonable prices. All interests pin their faith on the resumption of heavier buying early next spring.

Ceylons			
Smoked sheets ribbed, spot	.23	@	—
Smoked sheets ribber, Oct.	.23	@	—
Smoked sheets ribbed, Nov.-Dec.	.24	@	—
Smoked sheets ribbed, Jan.-June	.28	@	—
Smoked sheets plain, spot	.23	@	—
First latex pale crepe	.25	@	.25½
Amber crepe, No. 1	.23	@	—
Amber crepe, No. 2	.22	@	—
Amber crepe, No. 3	.21	@	—
Clean brown crepe	.21	@	—
Light clean brown crepe	.22	@	—
Roll brown crepe	.17	@	—
Grand Central crepe	.19	@	—
Africans			
Rio Nunez string	—	@	—
No. 1 Benbuella	.12	@	—
No. 2 Benguella	.08	@	.10
Paras			
Up-river fine	.26	@	—
Up-river medium	.23	@	—
Up-river coarse	.17	@	—
Caucho ball	.18	@	—
Islands fine	.16½	@	—
Islands coarse	.30	@	—
Maderia fine	—	@	—
Knapsack	—	@	—
Centrals			
Corinto prime	.16	@	.17
Esmerelda prime	.16	@	.17
Miscellaneous			
Guayule wet	Nominal		
*Balata block Panama	.35	@	—
Balata sheets	.70	@	—
Cameta	.17	@	—
Palembang	.07	@	—
Prime Surinam sheets	Nominal		

*Nominal

Scrap Rubber

NEW YORK, OCT. 5, 1920

The market is in a demoralized condition, insofar as prices and activity are concerned, and there is no improvement to be reported for the fortnight under review. The market has apparently sunk into a rut and only an active buying wave can stimulate interest to any great degree. Stocks of scrap rubber continue to accumulate in dealers' hands the low basis of prices now ruling not having had any appreciable effect in cutting down the gathering of waste material.

Reclaimers have not come into the market for scrap in any quantity during the period, and many of them are not accepting delivery of scrap already ordered. While they are not cancelling outright, they are arranging for deferred deliveries, the plan being to hold back the goods until needed, so the market will not become overloaded.

Export business has been of no importance. A few inquiries were reported, but they led to nowhere. A few consignments of scrap rubber which had been sold to the export trade some time ago have been turned back to the original sellers, buyers abroad being unable to accept delivery.

The long-awaited fall buying movement is now about due, but dealers see no immediate sign that would indicate the beginning of a buying drive. With rubber manufacturers generally working on a very curtailed basis, and the market overloaded with cheap crude stock, little hope for any early improvement in the market for scrap is looked for.

Prices during the period held nominally unchanged, with few exceptions. Mixed hose was a little easier, the inside price easing off to one half cent per pound, while black rubber strengthened somewhat.

	Cents per Pound.		
Solid Tires	1.50	@	2.25
Auto Tire Peelings	2.50	@	2.75
Truck Tires	2.00	@	2.25
Black Rubber	1.50	@	2.00
Boots and Shoes	5.75	@	6.00
Arctics, trimmed	4.25	@	5.00
Arctics, untrimmed	4.00	@	4.12½
Tire—Automobile	1.25	@	1.50
Bicycles, pneumatic	1.00	@	1.50
Mixed Hose	.50	@	1.00
Air Brake	1.50	@	—
Inner Tubes, No. 1	8.00	@	8.50
Inner Tubes, No. 2	5.50	@	6.50
Red Tubes	4.00	@	5.00

New Distributors for India Tires

Two new distribution appointments—one in Denver and the other in Richmond, Va.—have just been announced by the India Tire & Rubber Co., which due to the prominence of the firms involved, have wide interest throughout the tire field.

The new distributing company for Indias in Denver is The Allen & Guard Tire Co., a recently organized firm composed of some of the best known tire and oil men in that section of the country. The territory includes the whole state of Colorado. Besides a wide acquaintance with dealers throughout Colorado and neighboring States, Allen and Guard have an unusually attractive show room and one of the choicest locations in the city.

The General Auto Supply Co. will henceforth handle India tires in Richmond, Va., and vicinity. The company has completed plans for an extensive Iudia campaign among an already large clientele of dealers.

American Rubber Patents

ISSUED SEPTEMBER 14, 1920

1,352,614—To John Lehner, Pittsburgh, Pa. Suction mechanism for dental plates.

1,352,677—To Wade W. Moore, Pittsburgh, Calif., assignor to Jesse E. Roach, Oakland, Calif. Eraser attachment for pencils.

1,352,730—To Henry C. Egerton, Passaic, N. J. Shoe-sole.

1,352,731—To Henry C. Egerton, Ridgewood, N. J. Gripping shoe-sole.

1,352,732—To Henry C. Egerton, Ridgewood, N. J. Weather-strip.

1,352,373—To Henry C. Egerton, Ridgewood, N. J. Mat.

1,352,374—To Henry C. Egerton, Ridgewood, N. J. Gripping rubber shoe-heel.

1,352,736—To Henry C. Egerton, Ridgewood, N. J. Rubber shoe-sole for turn-shoes.

1,352,737—To Henry C. Egerton, Ridgewood, N. J. Partially stiffened shoe-sole.

1,352,738—To Henry C. Egerton, Ridgewood, N. J. Process of making boots and shoes.

1,352,739—To Henry C. Egerton, Ridgewood, N. J. Fabric.

1,352,740—To Henry C. Egerton, Ridgewood, N. J. Vulcanized rubber hose.

1,352,942—To Lewis Dodge and Charlie B. Dodge, Morse Bluff, Nebr. Pneumatic foot.

1,352,943—To Lewis Dodge and Charlie B. Dodge, Morse Bluff, Nebr. Pneumatic foot.

1,352,957—To William Van V. Hayes, New York, N. Y. Blow-out patch.

1,353,042—To Edward Harris, Los Angeles, Calif. Retread-vulcanizer.

ISSUED SEPTEMBER 21, 1920

1,353,158—To John R. Gammeter, Akron, Ohio, assignor to B. F. Goodrich Co., Akron, Ohio. Tire-mandrel and method of producing same.

1,353,383—To Julius N. Dieser, San Francisco, Calif. Vulcanizing pad.

1,353,421—To Ralph Earl Riley, Akron, Ohio, assignor to Miller Rubber Co., Akron, Ohio. Method of manufacture of rubber bathing caps and analogous articles.

1,353,592—To Frank E. Howard, Lamanda Park, Calif. Garment supporter for hosiery.

1,353,671—To Clare MacDonald Supple, Boston, Mass. Stocking supporter.

1,353,757—To Alfred Christian Janassen and Noah Jonassen, Whakatane, New Zealand. Resilient tire.

1,353,769—To Colin Macbeth and William Edward Hardeman, Birmingham, England, assignors to the Dunlop Rubber Company, Ltd., Westminster, England. Manufacture of solid rubber tires.

Kelly Springfield Earnings

The Kelly Springfield Tire Company made net earnings of $3,532,088 last year, compared with $4,589,765 in 1918. After deduction of interest, dividend on preferred stock, etc., also $2,674,951 for war tax of 1918, only 4½ per cent on the $5,361,973 of common stock was left. Dividends of sixteen per cent in cash and nine per cent in stock were paid, leaving a deficit for the year of $1,009,570 and reducing profit and loss surplus to $8,641,553. That surplus indicated a book value of $66 for each share of common stock of $25 par. Part of this amount represents good will—just how much is not shown. The company is about to issue some new stock at $50 in the near future.

Frank Hale with Ashland Tire

Frank M. Hale has been retained by the Ashland Tire & Rubber Company, of Ashland, Ohio, as factory superintendent, in full charge of manufacturing and production. Mr. Hale has at his disposal, a modern plant with a capacity of 1000 tires and 1500 tubes per day. The company feels very fortunate at having been able to secure Mr. Hale's services as his past fifteen years experience as a chemist and production expert will be of great assistance in handling the factory efficiently, and also in producing an extremely high grade product.